V.3

305
P72

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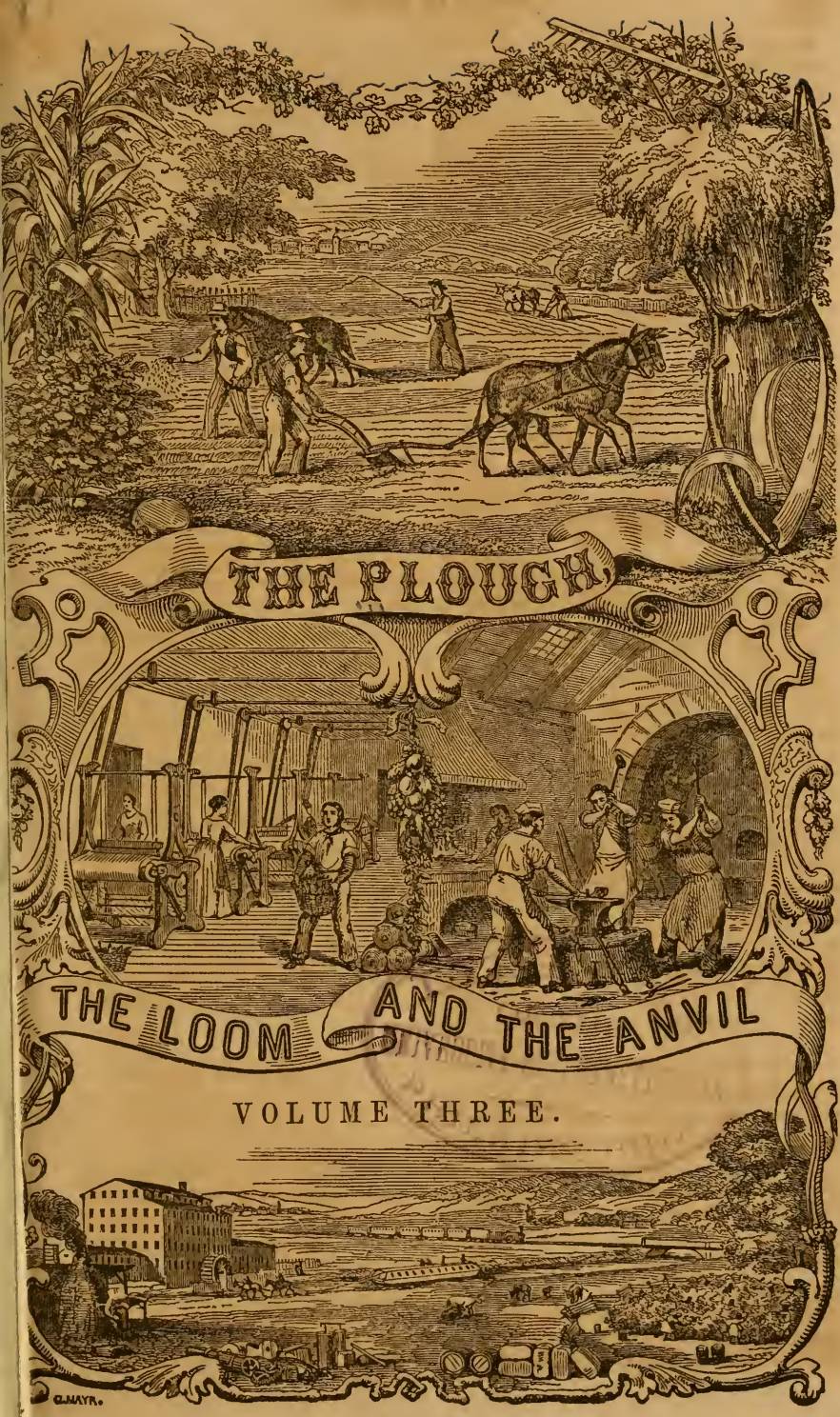

VOLUME THREE.

PHILADELPHIA:
J. S. SKINNER, 79 WALNUT STREET.
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305
P72
v.3

INDEX TO VOL. III.

Ad Valorem System, Errors of the, 731.
Advantage of bringing Machinery to the Cotton, 6.
African Cotton, Attempts to raise, 150.
Agricultural Advancement, 438.
———— Botany, Lectures on, 776.
———— Carriages, 582.
———— Discovery, important, 638.
———— Exhibitions, how they are useful, 583, 786.
———— Improvement in New-York, 553.
———— Interests, check to the, 749.
———— Labor in England, 69.
———— Machinery, important Improvement in, 743.
———— Prospects in North Carolina, 264.
Agriculture, American, injured by continuance of British Influence, 629.
————, American, what Foreigners say of it, 507.
————, cause of non-improvement in, 18.
————, Key to unlock the door of, 623.
————, Steam applied to, 241.
Alabama, Geology of, 59.
Alimentary Substances for the Working Classes, 624.
Alderney and Jersey Cows, 24.
American Cheese Trade, 86.
American Wool at the World's Fair, 439.
Americans Responsible for the Wars of England, 272.
Animals, on the Heads of, 616.
Appeal to Agricultural Inventors, 132.
Apple, Cultivation of the, 495.
Arabian Horse, 349.
Asparagus, 570.
Atmosphere of Stables, 22.
Baldwin Theory, 261, 363.
Bank Capital and Profits, 543.
Bargains, great, 407.
Barley, Varieties of, 315.
Bathing Sheep to Kill Vermin, 462.
Beans as Cattle Food, 620.
Bee-keeping, Profits of, 504.
Belgian Husbandry, 19.
Bellowsed Horse, Cure for a, 769.
Big Head in Horses, 453.
Bipeds the best things to Import, 231.
Bleach Works, Manure from, 784.
Bones and Sulphuric Acid, 18.
Boots and Shoes, the Trade in Pegged, 109.
Boston, Farms and Villages around, 295.
Brazil, Supply of Cotton from, 146.
Breeds of Domestic Animals, how to Improve, 232.
Bristle, raising and feeding Swine for the, 372.
British Slave History disgraceful, 145.
Brobdignag Glass-House, 560.
Brook-Water for Irrigation, 739.
Brown's Patent Fumigator, 64.
Bull, proper Shape and Qualities for a, 386.
Burlington Agricultural Society, 58.
Butter, Directions for making good, 325.
Butter-Maker, 51.
Calendar of Operations, 63.
Californians return Poor, 545.
Campton Church-yard, 321.
Capital and Labor wasted in Transportation, 7.
Capital, who Suffers by its Waste, 208.
Capitalist, how affected by Protection, 2.
Capitalist, Small, Ruined by Fluctuations occasioned by the British System, 274.
Carbon in the Air, 322.
Carcass Weight of Sheep, 783.
Carey's Letters, 322.
Carrots *versus* Oats, 776.
Cattle, Importations of, 24.
Cause of the Difficulty between the North and the South, 91, 262.
Charcoal, on the Use of, 625.
Charring Wood, 513.
Cheap Food, who desires? 749.
Check to Agricultural Interests, 749.
Cheese Trade, American, 86.
Cheshire Cheese, making a, 75.
Chicken Pot-pie, 397.
Chloride of Lime prevents Smut in Wheat, 502.
Cider equal to Champagne, how to have, 172.
Cider-making and Cider-bottling, 49.
Clapp's System of Farming, 517.
Clotted Cream, 621.
Cockroach, 17.
Cocoa-nut Sugar, 264.
Coffee, Adulteration of, 626.
Combination of Labor, Strikes, &c., 137.
Commerce, Definition of, 288.

Rep.
93044

Commerce tends to produce Equality of Condition, 67.
Communism among Nations produced by Policy of England, 68.
Comparative Consumption of Food by Animals, 44.
Compromise Bill a Failure, 476.
Condition of English People, 68.
Consistency, 736.
————, a Jewel—Collins' Steamers, 748.
Consumption in Horses, 90.
Conversion increases man's necessities, and diminishes his powers, 159.
Conversion tends to destroy labor and capital, 10.
Corn Crops twenty-seven years ago, 126.
Corn, great Crop of, 691.
Corn Salad, 684.
Cotton, Consumption of, in the United States, 727.
——— Mills, Closing of, 358.
———, Ratio of its Growth to Population, 469.
——— Spindles of the World, 425.
———, Supply of to Britain falling off, 155.
———, Weekly Consumption of in Great Britain, 151.
Cows, to make them Calve in the Daytime, 554.
Cream Cheese, 326.
Currency, how affected by Protection, 205.
Cuthill on the Cultivation of the Potato, 619.
Dairy Husbandry, Butter and Cheese-making, 162, 618, 702.
Delaware Fruit Trees, 588.
Desultory Notes, by an Agricultural Reader, 611.
Deterioration of Imported Stock in the United States, 28.
Devon Ox, Weight of the, 626.
Diamond Dust, 398.
Disasters of 1836 to 1842, how produced, 204.
Disasters, present tendency to, 205.
Discovery, Important Agricultural, 638.
Dog and his Diseases, 523.
Domestic Animals, to Improve Breeds of, 232.
Drains, how Accurately Levelled, 712.
Droop not upon your way, 398.
Ducks, raising Muscovy, 397.
Duties of the United States, 341.
East Indies, British Supply of Cotton from, 152.
Effect of Mechanical Pursuits on the Mind, 765.
Effect of Ploughing-in Green Crops, 355.
—— of separating the Consumer from the Producer, 249, 362.
Egypt, British Supply of Cotton from, 146.
Elements of Agriculture, 444.
Emigration, its Effects, 675.
England, condition of inhabitants of, 6.
——— fixes the price of products of the farmer, 2.
English Cattle Imported into Kentucky and Ohio, 419.
——— Influence Hurtful to American Agriculture, 629.
——— Market for our Cotton does not grow with itsProduction, 156.
Entomology, 17, 755.
Essex County Agricultural Fair, 301.
Ether and Chloroform in Veterinary Practice, 104.
Every Little makes a Muckle, 637.
Exchanges, how affected by Protection, 273.
Exhaustion of the Land, Cause of the, 354.
Experiments in the Field, 784.
Fairfax, Va., what can be done in, 445.
Farmers and Farmsteads in Baltimore County, 48.
Farmers of the United States and the Markets of the World, 447.
Farmers' Sons and Medical Schools, 309.
——— ——, should learn at School, 259.
Farm Horses, Form of, 14.
Farming, what good consists in,101.
Fascination in Serpents, 13.
Fattening Cattle, 771.
Feat Under Arms, 240.
Female Education, 396.
Fences, by Jas. Worth, 520.
Field Bean, 243.
Fine Wool and fine Mutton go together, 200.
Fish, Remarks on Raising of, as connected with Agriculture, 191.
Flannel Cakes, 318.
Flax Bleaching by a New Process, 760.
—— Cotton, 760.
—— Cotton in England, 640.
—— made to resemble Cotton, 184.
——, New Process for Manufacturing, 458.
—— New Process for Preparing, 565.
Fly, to Destroy the Green, 684.
Folly of sending Cotton a long distance to be manufactured, 670.
Food, Advantage of Reducing for Cattle, 506.
Freedom of man increases with wealth and population, 138.
Free Trade, approach to, is progress downward, 136.
——— League, 401.
———, Operations of, 198, 246.
Friendship unknown in Trade, 280.
Fruit Culture in New-England, 367.
Fruit Garden and Farm, 63.
Fruit-tree Borders, 347.
Fumigator, Brown's Patent, 64.

Game, its Nature and Habits, 390.
Give us a little more Southern matter, 468.
Gold and Silver contribute little to Man's Necessities, 206.
Good News for Horses, 750.
Government, how affected by Protection, 335.
Grain, the best mode of Preserving, 701.
Grape, Culture of the, 348.
———, Seedling, 243.
Grasses, 312, 572.
———, Italian Rye, 253.
——— for Permanent Pastures, 462.
Gravel Walks and Roads, 760.
Grease for Carts, 586.
Greenhouse, how to Smoke a, 759.
Growth of Wheat delineated, 34.
Guano Compared with other Manures, 15, 244.
———, Experiments with, 631, 638, 742.
———, Mode of using, and Frauds in, 127.
Gutta Percha Soles, 288.
Hambleton, the late Samuel, 548.
Hams, Art of Curing good, 397.
Hay-making in England, 190.
——, Unloading at the Barn, 103.
Heads of Animals, 616.
Hear Both Sides, 112.
Hemp under the Protective System, 540.
Hide not your Light under a Bushel, 764.
History of a Man and his Nursery, 351.
Home Industry inadequately encouraged, 547.
Hoosier Pig, 761.
Horse, Anatomy of the, 449.
———, Bellowsed, Cure for a, 769.
———, How to Subdue a Vicious, 770.
———, Muscular System of, 501.
———, Shoulder Lameness in, 685.
Horses, Big Head in, 453.
———, Genuine Arabian, 349.
———, On Breeding, 166.
———, Sale of, 369.
Horticultural Memoranda, 129, 199, 316, 391, 459, 574.
Horticultural Exhibitions and Festivals, 204.
Hotbeds, German, 530.
How Population gives value to the Land, 167.
How to Deprive the Farmer of a Market, 388.
Human Excretal and Peat Charcoal Manure, 307.
Imported Ewes, Col. Ware's, 320.
Importations of Cattle, 24.
——— of Iron, 655.
Improvement of Poor Sandy Land, 763.
Impulsoria, the Patent—a new Motive Power, 177.
Individual Credit, how affected by Protection, 327.
Insects Injurious to Vegetation, 344.
Intellectual condition of man, how affected by Protection, 284.
Iron, British and American, on Reading Railroad, 627.
Iron, Comparative Value of British and American, 754.
Iron Works stopped, 446.
Irrigation, 707, 737.
Italian Rye-grass, 253.
Kirkleavington Cattle, 27.
Labor and capital wasted in transportation, 10.
Labor has smallest return where machinery of transportation is most needed, 67.
Labor tends to produce equality of condition, 69.
Laborer, how affected by Protection, 65.
Laborers of England, how they profit by cheap food, 434.
Lafayette Cattle-show in Maryland, 375.
Lamb-lettuce, 684.
Land, how Population gives Value to the, 167.
Lectures on Agricultural Botany, 776.
Levelling of Drains, 712.
Liquid Manures, 361.
Live-Stock Insurance, 182.
Loss of Capital from want of Concentration, 389.
Love of Flowers, 764.
Lumber, Market for, diminished, 596.
Machine-making, 409, 468.
Machinery must be brought to the Cotton, 5.
Machinery of three kinds, 65.
Machinery required to render Labor productive, 65.
Man of Business, 762.
Manufacturers at the North and South, 35.
Manure, Rags for, 718.
Manures, Experiments with, from Bleach Works, 784.
——— Experiments, with Guano and other, 15, 127, 175, 742.
———, Liquid, 361.
———, ———, for Onions, 16.
———, ———, for Pear-trees, 178.
———, ———, Quality of, 14.
Marble Lime, 116.
March of Intellect, 372.
Maryland Agricultural Committee, 124.
Maryland Agricultural Society's Exhibition, 380, 461.
Maryland Husbandry, Reflections on, 426, 484.
Massachusetts Charitable Mechanics' Association Exhibition, 198, 293.
Meat Biscuit, 365.
Mechanical Pursuits, their effect on the Mind, 765.
Medical Schools and Farmers' Sons, 309.
Melon, Cultivation of the, in France, 379.
Merinos, on the Origin of the, 183.
Middlesex Fair at Concord, 296.

Miners' and Manufacturers' Convention at Richmond, 455, 518.
Minnesota, Emigration to, 245.
Mission, True, of the United States, 341.
Montgomery County, Maryland, Capabilities of, 121.
Morality, how affected by Protection, 277.
Motive Power, a New Application of, 177.
Muck, Experiments in the use of, 457.
Mutton substituted for Pork and Beef, 435.
Mutual Dependence of Nations, 741.
Nation, how affected by Protection, 337.
National Credit, how affected by Protection, 332.
National Machine-making, 468.
Naval Stores under the Protective System, 540.
New-England, wages in, will rise when they increase in the South and West, 67.
New Journal, 751.
News, good, for Horses, 750.
New Year's Salutation to Patrons, 463.
New-York State Fair, 291.
Night Soil, its Value, 494.
Noiseless Carriage-wheels and Horse-shoes, 190.
Norfolk County Agricultural Fair at Dedham, 297.
Northern Aggressions, 43.
North Carolina, Agricultural Prospects in, 264.
Oat Hay, 169.
Oats *versus* Carrots, 776.
Obituary of John S. Skinner, Esq., 658.
Okra, 683.
Ohio Cattle-Importing Company, 422.
Onion Grower, a large, 247.
Onions, Cultivation of, 305.
——— how to Increase a Crop of, 359.
Origin of the Merinos, 183.
Our Policy and Interests, 546.
Oxen, Strength of, 167.
Paring and Burning, 87.
Pauperism results from the English Colonial System, 270.
Peaches, their Planting and Cultivation, 586.
Peat Charcoal, its Uses and Preparation, 530, 555.
—— ——— Manure, 197.
—— ——— and Human Secretal Manure, 307.
Pepper, how to Pound Red, 588.
Peruvian Barley, Productiveness of, 444.
Pig in Cincinnati, 637.
Pigeons, Management of, 323.
Pins, prices of, under Protection, 730.
Pisiculture, Remarks on, 191.
Plank Roads, Plan, Materials, Cost, &c., 56.
Planters' advantages, if possessing their own machinery, 4.
Planters oppose their own Interests, 45.
Planters' true policy to break down English monopoly of machinery, and bring English machinery to the cotton field, 161.
Planters, why they receive small returns for their capital, 4.
Plough, Honor to the, 592.
———, the Loom, and the Anvil in Rhode Island, 52.
———, why Steam is not likely to be applied to the, 752.
Ploughs and Ploughing, 692.
Population brings food from rich soils, 51.
Pork Exported, 542.
Portrait and Pedigree of a Short Horn Heifer, 179.
Potato Crop and its Diseases, 589.
———, Cuthill on the Cultivation of the 619.
——— Flour, 369.
——— Flour subject to 10 per cent. ad valorem duty in England, 448.
———, how stored with Peat, 747.
——— Rot, 733.
———, when is it ripe? 456.
Powers of man increase as his necessities diminish, 208.
Preserving Grain, the Best Mode of, 701.
President's Message, 591.
Prices abroad have not a tendency to fall, 729.
Prices of leading American Agricultural Staples, 59, 393, 461, 528.
Producers pay the Duties, 723.
Productive power, diminution of, brings discord and internal disorder, 269.
Productive Power of the United States, 681.
Profits of Fruit Culture in New-England, 367.
Promises and Performances of Tariff of 1846 contrasted, 659.
Propagation by Leaves, 767.
Proper Shape and Qualities of a Bull, 386.
Prospect at the Opening of the Year 1851, 399, 467, 531, 595, 659.
Prospects of the Farmers, 384, 750.
Prospects of the Planters, 319.
Protection, how it affects morals, 277.
———, public credit, 331.
———, revenue and expenditure, 333.
———, the capitalist, 2.
———, currency, 161.
———, exchanges, 273.
———, friends of peace, 268.
———, government, 335.
———, intellectual condition, 284.
———, nation, 337.
———, political condition, 327.
———, slave and his master, 75.
———, woman, 275.
Protection saves cost of transportation, 2, 725.
——— the true and only road to freedom of trade, 665.

Public Debt, how incurred, 473.
Public Expenditure, 604.
Rags for Manure, 719.
Railroads in New-England, 263.
Railways, European and American, 525.
——— in Georgia, 561.
——— in the United States, 653, 676.
Readings for Mothers and Children, 323, 395.
Reaper, Improved, 785.
Reaping Machines, 747.
Reciprocity Bill, 656.
Reciprocity with Canada, 244, 319, 656.
Reservoirs for Irrigation, 738.
Revenue, how affected by Protection, 333.
Revenue System dependent upon papers prepared abroad, 733.
Rhubarb, 716.
Rice under the Protective System, 540.
Riddle for Scotchmen, 624.
River Water for Irrigation, 708, 739.
Robin, the, 323.
Rocky Mountain Goat Recommended, 195.
Roswell House, Paterson, N. J., 136.
Rural Scenery, Principles of Beauty in, 765.
Sale of Short-horns, 288.
Saltpetre for Wheat, 364.
Sandstone as a Building Material, 714.
Sea Kale, 249, 568.
Seed for Wheat, 743.
Seedling Grape, 243.
Sending home to England, 735.
Serpents, Fascination in, 12.
Shade the Greatest Fertilizer, 745.
Sheep, a big, 165.
Sheep, Carcass Weight of, 783.
——— Husbandry in Alabama, 29.
——— ——— in United States, 209.
Shoulder Lameness in Horses, 685.
Silver and Gold contribute little to Man's Necessities, 206.
Skinner, John S., Obituary of, 658.
Slavery Agitation, how best Ended, 141.
——— should be abolished by making a Market on the Land in the South, 140.
Slave History of England, disgraceful to that Nation, 145.
Slaves have been well kept in the United States, 145.
Slave Labor in Factories, 248.
Slaves, Northern men cannot raise, 149.
Smoke a Greenhouse, how to, 759.
Smut in Wheat prevented by Chloride of Lime, 500.
South Carolina, her Inability to Produce Cotton in Competition with her Neighbors, 142.
Sparkman on the Sweet Potato, 576.
Spermaceti Oil Receipts, 545.
Spirit of Speculation in America, 676.
Spring Waters in Irrigation, 737.
Stables, Atmosphere of, 22.
Statistics for Farmers, 134.
Steam applied to Agriculture, 241.
Steam not applicable to the Plough, 752.
Strange Absurdity, 758.
St. Vincent, 319.
Sugar Cane, Analysis of the Ashes of, 682
——, Manufacture of, 441.
——, Manufacture of, by a new process, 758.
——, Production of in Plants, 505.
Sunflower, Cultivation of, 593.
Swine, raising and feeding for the Bristle, 372.
Swords and Muskets hinder Returns to Labor, 268.
Tariff, consequence of the total Repeal of the, 727.
——— of 1842, 478.
——— of 1846, 531.
Tea, how we pay for, 757.
Telegraphic Dictionary, 288.
Tendency to produce only the finest Cotton Fabrics in England, 155.
Texas, Emigration to, 418.
Texan Grasses, 499.
Thawing Frozen Plants, 758.
The Duke's Room at Walmer Castle, 366.
Threshers, On Wheat, 185.
To all whom it may Concern, 321.
Tobacco, Average Export of, 539.
———, Cultivation of, 491, 720, 734.
Tonnage under present Tariff, 671.
Trade in Pegged Boots and Shoes, 109.
Transportation, Capital employed in, 4.
——— ——— paid for by producer, 725.
True Cause of existing Difficulties, 37.
Turning a Prize Pig to Account, 369.
Turnips, Novel Mode of Stealing, 499.
Tussac Grass from the Falkland Islands, 498.
United States, British Supply of Cotton from the, 147.
——— ———, True Mission of the, 341.
Valley Agricultural Society of Virginia, 168.
Variations of the Compass, 245.
Vegetables, how to enlarge, 483.
———, New, 317.
Vegetation, Insects injurious to, 344.
Ventilation, Principles of, 296.
Vermin in Sheep killed by Bathing, 462.
Veterinary Practice with Ether and Chloroform, 104.
Vicious Horse, how to Subdue a, 770.
Vine, Cultivation of the, 607.
Virginia and its Natural Advantages, 371.
——— Policy and Virginia Interests, 762.
Visit Down East by the Editor, 239.
Walker, to the Hon. Robert J., 401.
War, Causes of Recent, 268.
Wars of England, Americans responsible for the, 272.

War, on what the power to make it depends, 269.
Warning to the South, 35.
Waste Manures of Washington City, 320.
Wear and Tear of British and American Iron on Reading Railroad, 627.
Welsh Farmer in England and America, 519.
What can be done in Fairfax, 445.
What have Farmers to do with Education? 187.
Wheat, an entirely new Variety of, 171.
———, Chloride of Lime prevents Smut in, 500.
——— Crop, a new Enemy to the, 654.
———, Cultivation of, 112.
——— Fly, the, 198.
———, Price of in England, 618, 620.
———, Proper Depth to Sow, 32.
———, ——— Quantity of Seed for, 743.
———, Saltpetre for, 364.
——— Threshers, 185.
When are Potatoes ripe? 456.
Who pays the Duty? 723.
Woman, how Protection affects, 275.
Wood, on Charring, 513.
Woodlice, Destruction of, 766.
Wool and Mutton, 594.
—— and Woollen Factories in Texas, 370
——, American, at the World's Fair, 439.
—— at the New-York County Fair, 503.
—— Growers at the South encouraged, 516.
——, Importance of Mr. Browne's Examinations on, 36.
——, Letter of W. F. Van Amringe on, 250.
—— producers, how benefited by Protection, 536, 636.
Workey, the, a new Agricultural Machine, 131.
World's Exhibition, 318, 417, 521.
Worth on Fences, 520.
Young Farmers' Experience, 174.

The Plough, the Loom, and the Anvil.

VOL. III. JULY, 1850. No. I.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

WHO THE CAPITALISTS OF A COUNTRY ARE, AND HOW THEY ARE LIABLE TO BE AFFECTED BY ITS COMMERCIAL POLICY.

HAVING been ourselves reared, emphatically, *in the country*, not distant, it is true, yet for the want of the modern facilities of communication, cut off in a manner, and secluded from the busy throng of large commercial towns, we may be allowed to know something of the habits and course of thinking among that class who constitute the mass of our readers; and this knowledge begets the apprehension that most of them will associate, with the word "capitalist," at the head of the following chapter, inseparably and exclusively, the idea of a "moneyed man," possessing a large fortune in the banks or in the funds—too many of them leeches, born only to suck the blood of honest industry—and that readers prepossessed of that idea, may therefore be ready to say, how does it concern us, mere owners only of land and cattle, to know "*how* protection affects the capitalist?"

Now, than this narrow conception of the broad and true import of the word capitalist, it behooves all inquirers after truth, equally the owner of land and of ships, the man at the plough and the anvil, and him at the work-bench, and in the mine or at the furnace, to know that no idea can be more erroneous, nor, in this connection, more perniciously delusive. It is not for the nabobs of the town, the millionaires, that *we* either think, write, or care. Such men are above the reach of ordinary vicissitudes, and can generally take care of themselves, as big flies break through the meshes of difficulty, leaving thousands of smaller ones to be caught and devoured. Hence it is, that in their effects, low, ever-fluctuating and uncertain duties; duties depending on custom-house oaths and stereotyped manifests, left blank to be filled up "to order" from the foreign manufacturer, according to circumstances; *such* duties may, and in effect do first reach and ruin thousands of small capitalists, honest labouring men, whose capital is in their individual character and industry, before they can vitally affect the great capitalist. *They* have built their palaces on the bluffs and high grounds, far above the reach of spring-tides and sudden overflows, like the great millionaire, Mr. Brown, of "Richmond Hill, near Liverpool," author of the persuasive and patriotic letter to Mr. Meredith, on the folly of *a protective policy for the United States!* Though such capitalists too often influence public legislation, they are never the peculiar care of wise governments. Having already amassed their millions, out of the blind credulity of those whom they would persuade to go on employing them, under the free trade system, between the planter of cotton on the coast of Mississippi, and the weaver of cotton in Manchester, who expects such capital counsellors ever to acknowledge the truth of General Jackson's declaration, that "we have been too long subject to the policy of British merchants?" No! no! for ourselves, *timeo Danaos et dona ferentes.* We distrust their advice. What we seek and desire is, that the study of this chapter, and of all these letters from Mr. Carey, in reply to the circular from the Secretary, should be constantly accompanied with the idea, which is true, that the idle and the avaricious nabob, whose fortune is in the public securities, as well as the enterprising and philanthropic man whose fortune gives employment to honest industry in useful enterprises, is no more a capitalist, except in amount, than he who has a section of land, with "a sheep and a cow;" nay, no more, nor more worthy of being cared for, in the legislation of a well administered government, than the day-labourer, whose capital is in his working-tools, and his capacity and willingness to use them. Every man in this country, with physical power to labour, is a capitalist; and thousands and tens of thousands of such capitalists may be oppressed and ruined, for want of protection against the unprotected, trodden-down pauper-labour of Europe, while the great capitalist, in his life-boat, here as there, survives the common wreck. Men at the loom, and the work-bench, and the saw-mill, the miner and the forger, the best customers of the farmer and the planter, first, and they in their turn, by thousands and tens of thousands, may be crippled and ruined in the use of their capital, by laws that paralyze industry, before they reach those whom too many of our friends in the country regard as the only capitalist, to wit, the great "moneyed men" of the towns, just as the fire in the woods destroys all the undergrowth and valuable young timber, leaving only the great trees, whose roots have gone into the bowels of the earth, and their branches to the clouds.

What we desire then is, that our readers should feel how deeply and truly, of all men, *they* are interested in such questions; that they should see that they stand on intermediate ground between ruin and the great capitalist; in a word, that they should understand that the capital of the country is *in the land and labour of the country!* The earth, after all, as Mr. Carey truly says, is the great machine; and the policy which brings its products to the best markets, and with the least expenditure in the work of deportation and exchange between the producer and the consumer—*that* is the policy which it behooves the owners and cultivators of the soil to *understand* first, for then they will uphold and enforce it; for then they will perceive that such is the only policy that will keep up and increase the powers of the great machine of production, insuring adequate return to the capital employed in its cultivation.

Edit. P. L. & A.

CHAPTER THIRTEENTH.

HOW PROTECTION AFFECTS THE CAPITALIST.

If protection be "a war upon labour and capital," it must tend, by lessening the productiveness of labour, to prevent its proper employment, and thus to diminish the power of accumulating wealth by the clearing, draining, and enclosing of lands, the building of houses, the construction of roads and bridges for facilitating transportation, and of machinery for converting the products of the earth into the form required to fit them for the use of man. If, on the contrary, it be really, as its name imports, protection to the labourer, then must it increase the power of accumulating wealth, to be used for increasing his productive power, and thus facilitating the accumulation of further wealth.

The great machine of production is the land. The more time and mind that can be given to its cultivation, the more rapid will be the increase of production, the larger will be the return to capital, and the more rapid the improvement in the condition of man.

The more time and mind that *must* be given to the preparation of machinery of transportation, the slower will be the increase of production, the smaller will be the return to capital, and the slower the improvement in the condition of man. The object of protection is that of bringing the consumer to take his place by the side of the producer; thus saving transportation, and facilitating the application of labour to production, while diminishing the number of persons among whom the produce is to be divided.

A furnace, capable of producing 5000 tons of iron per annum, may be put in motion at a cost of $30,000. These 5000 tons would exchange in Ohio for 150,000 bushels of wheat, the produce of 12,500 acres of land that has cost $40 dollars an acre, equal to $500,000, for the labour employed in clearing and draining it, in making fences, building barns, houses and doing all other things necessary to fit it for production. Let us suppose the furnace, houses for the men, preparation of the mines, &c. to have cost $100,000, and yet the capital employed is five to one, to obtain precisely the same return. This, however, is not all. The wheat weighs 4000 tons, and to transport this to New York and thence to Liverpool requires more capital in wagons and canal boats than would have been required to produce the iron at home; and far more capital employed in ships than would have done it; and thus we have a total of seven or eight, if not even ten times the capital that is needed, while the return is precisely the same—5000 tons of iron.

The capital invested in building the furnace, the houses, and in preparing the mines, would have been permanent, and it would have given value to every acre around, because it would have made a market on the land for the products of the land, whereas, the wagons, ships, and canal-boats disappear with time; and the land, constantly cropped, becomes exhausted, and is frequently abandoned by the owners, and thus is the whole wasted.

The farmer will say that he could have obtained no more iron on the spot for the produce of his land, that the iron-master paid him for his wheat and charged him for his iron according to the price in Liverpool, and that he profited as much by exchanging in the one place as in the other. This is too nearly true. So long as he is *compelled* to compete with the inferior labour of Europe, so long must he accept this as a consequence. So long as he is *dependent* on England for a market for a single million of bushels of wheat, she will fix the price of all that is produced; and so long as he is *dependent* on her for the last few thousand tons of iron, she will fix the price of all that

is consumed. He needs to bring the home consumption of food up to the production, and the home production of iron up to the consumption, and the price of both will then be fixed at home. A little capital will then yield much iron. Now, much capital is required to produce little iron.

It has been shown (page 74,) that the whole of the cotton, 311,000,000 of pounds, consumed by the people of Great Britain and Ireland in 1845 and 1846, would have been paid for by 6,250,000 pieces of plain cottons, and 210,000 tons of iron, delivered in Liverpool. By the time this cloth and iron reached the plantation they would have shrunk into 5,000,000 pieces of cloth (120,000,000 of yards) and 160,000 tons of iron; and perhaps into a still smaller compass, even supposing them imported duty free. To have produced this 120,000,000 yards of cloth in those *two years* would have required 20 mills of moderate size, each capable of converting into cloth 2000 bales of cotton, and to have produced this iron would have required little more than two establishments, such as the one described at page 42, as existing in the Lehigh region of Pennsylvania.

To transport the 700,000 bales of cotton must have required 60 ships, each carrying 2000 bales, and making three voyages a year. Add to these, steamboats, warehouses, packing-machinery, &c., on this side of the Atlantic, and the docks, drays, warehouses, cars, railroads, &c. on the other side, and it will be found that the capital required for the work of transporting these 311,000,000, *after they had reached the place of shipment*, was three times more than would have furnished machinery that would have enabled the planter to convert the whole of them on the spot. *For all this the planter pays*, and therefore it is that we find him to have sent away 311,000,000 of pounds of cotton, to be exchanged in Liverpool for 74,000,000 of pounds in the form of cloth, and then to be reduced to 60,000,000 by the time they arrive on the plantation, thus giving five pounds of cotton for one yard of cloth. It is obvious that, even thus far, much capital is required to obtain small product.

Let us now see what was the amount employed by the planter in producing, at the place of shipment, the 250,000,000 of pounds that he gave in those two years to the people of England, for twisting and weaving the 60,000,000 that came back in the form of cloth. The annual average is 155,000,000 sent out, and 30,000,000 returned, 125,000,000 being lost on the road. The average product of cotton land is under 300 pounds an acre, at which rate 416,000 acres would be required for the production of the 125,000,000, saying nothing of the remainder of the various plantations not under cultivation. The average amount of labour, per acre, required to fit these lands for production, including fencing, houses, machinery, gin-houses, roads, &c., has not been less than one hundred days, and I should be safe in putting it much higher. Estimating those days at only 50 cents each, we obtain $50 as the actual expenditure required for each acre of land, at which rate the capital in land would be $20,800,000. Estimating the hands employed at no more than the land, we have a further sum of $20,800,000. Next, we have the capital employed in transportation to the place of shipment, and that some idea may be formed of that, I give the following statement, by one who furnishes it as the result of his personal observation:—

"Of the expense of this first movement, some idea may be formed by those who have seen it coming over dreadful roads, up to the hub, dragged slowly along 20, 30, or 40 miles, as we have seen it coming into Natchez and Vicksburg, hauled by five yoke of oxen carrying 2800 to 3000 pounds, and so slowly that motion was scarcely perceptible. So many perish in the yoke in winter and spring that it has been said, with some exaggeration, that you might walk on dead oxen from Jackson to Vicksburg. That was before the railroad was made. A wagon is loaded up, say 14 miles from Natchez, and

started at night, and reaches there in time to get back the next night time enough to "load up." Thus ten oxen have been wearing and tearing and dropping their manure on the road for 24 hours to make one load."*

Here we have five yoke of oxen transporting 3000 pounds in a day, a distance of only fourteen miles. Supposing the average distance to be 75 miles, and the roads to be similar, it would take them, *on an average*, a week to transport that quantity from the plantation to the place of shipment. I will, however, suppose that a single yoke of oxen can transport four bales, or 1800 pounds, per week. The number of loads would be 70,000, to be transported in the shipping season, which averages about eight months. To do this would require, always on the road,

2300 wagons, average cost $80, . . .	$175,000
4400 oxen, " " $40, . . .	175,000
2200 men, " " $600, . . .	1,320,000
	1,670,000
Total capital, ...	$43,270,000

This is a very low estimate of the fixed labour, called capital, given to the production at the place of shipment of these 125,000,000 of pounds of cotton. Let us now see how much is the fixed capital, the use of which is given by the distant manufacturers in exchange for all this. A mill that will work up 2000 bales of cotton can readily be produced at a cost not exceeding $100,000. These 2000 bales contain 900,000 pounds of cotton. Thirty-four such mills would work up 30,000,000 of pounds, and the cost of all these mills would be $3,000,000, or about one-fifteenth of the capital employed by the planter. Need we wonder that the planter's capital yields him a small return?

The more directly power is applied, the more efficiently it is applied. The more machinery that intervenes, the less is the power and the smaller the effect. The planter obtains his cloth and iron by the indirect means of raising cotton and food to send abroad, whereas, if he would apply his power directly to the production of both, production would be doubled and his power of accumulation quadrupled. Had the planters of 1845 and '46, provided themselves with machinery for the conversion of cotton into cloth, to the extent of the 155,000,000 consumed in England, they would have seen furnaces rise among them capable of producing treble the iron they could have obtained for that cotton, and thus would have been made a market on the land for the products of the land, the result of which would have been that they would have obtained far more for the balance of their crop than they did obtain for the whole. The produce of those 155,000,000 would then have bought them iron sufficient to make many hundred miles of railroad, and thus, while diminishing their necessity for resorting to distant markets, they would have increased their power so to do, by increasing their capital. It will be said, however, that while the labour employed in producing the cotton is set down, there is no allowance for that required for its conversion into cloth. No such allowance is needed. The labour of men, women, and children, now absolutely wasted in *every county* of the South is more than would be required for five such mills, and the cotton that is lost for want of aid in harvest-time would twice over pay for it.

The whole of those 125,000,000 of pounds of cotton consumed by the people of Great Britain and Ireland was thus absolutely wasted, and therefore it was

* Skinner's Journal of Agriculture, Vol. III., p. 483.

that the planter obtained one pound of cotton in exchange for five. Could the charges be saved that now intervene between the planter on one side, and the spinner and weaver on the other, he would obtain two pounds of cloth for three of cotton, and to acomplish this there is but one mode of proceeding, and that is *to persuade the machinery to come to the cotton*, and thus obviate the necessity for sending the cotton to the machinery. At present, we seem to be pursuing the same course that would be pursued by the man who should expend hundreds of thousands of days of labour in clearing and cultivating land for the production of wheat, and then wasting two-thirds of it on the road to and from the distant mill, for want of the application of three or four thousand days of labour to put up a mill on his own land. A grist-mill costing 5,000 days of labour will grind all the grain produced upon land that has cost 300,000, and perhaps 500,000, days of labour to place it in its existing condition; and yet the man above referred to, would waste on the road annually more days than would build such an one. So it is with our planters and farmers. We see in every little community that mills speedily rise for the conversion of grain into flour, and are satisfied with one-eighth toll; and so we see in every neighbourhood, where there are timber and a little water-power, saw-mills are got up for converting lumber into boards; and with each such operation, flour and boards are obtained at less cost of labour, and the farmer has to give less of wheat, and of timber, to have them converted into flour and boards. What would the wheat-grower say who should have to give five bushels for getting one back in flour*—and what should the cotton-grower say to getting back one bale of cotton in the form of cloth? Let him reflect on this question, and then answer the following one: Why should not every community of somewhat larger size have in like manner its own place for converting cotton into cloth? Could that be done, the planter would obtain half the cloth yielded by his cotton.

The latter will at first view probably deny this. He will say: If I sell my cotton to go to Manchester, it will produce me five cents. If I sell it to the manufacturer on the ground, he will give me no more. If I buy English cloth, it will cost me ten. If I had a manufacturer on the ground, I should pay the same. Such must be the case so long as he shall find himself *compelled* to compete in the market of England with the poor Hindoo for the sale of his cotton, and compelled to purchase there, a part of his supply of cloth, for so long will the prices of both be fixed in Liverpool. With every step in the progress of emancipation, however, he would find himself a gainer. Let him look around and see how much of the labour of his neighbourhood and of his own plantation is wasted for want of the demand that would be produced by the vicinity of the factory; and then let him reflect upon the advantage to be derived from having, in that factory, a place of employment throughout the year, of the persons who might, in case of need, aid him in his picking, and thus save for him the labour that is now lost on cotton wasted in the field, or overtaken there by frost. Let him consider these things, and he will probably find that the loss in them alone is equal to the value of the labour required for the conversion of all the cotton of the neighbourhood into yarn. If they could be saved, and he could thus, with

* "In some places in Virginia—in Rappahanock, for instance—the farmer does pay as much as one barrel to get four transported to Fredericksburgh, apparently not stopping to calculate at what price and what yield per acre that becomes a losing game, and apparently not reflecting, that while they pay 25 cents for transporting one dollar's worth of *wheat* they could transport the same weight, or fifteen dollars' worth of wool—or $7 50 of cheese, or $18 worth of live beef—at the same cost!"—*Ibid.*

the same labour, send yarn to market instead of cotton, he and his neighbours would be great gainers by the operation.

Having done this, let him look to the price at which he sells his corn, and see what would be the difference to him if he had a market on the ground in consequence of the conversion of some of his neighbours into mechanics, mill operatives, &c. Instead of remaining poor on the produce of little pieces of land, they would obtain good wages, and consume double their present quantity, while producing none. He would at once save much of the cost of transportation. He would sell food at home instead of having to buy it, with cost of commissions and transportation from his own neighbourhood added to it to increase its price, at Manchester or Lowell, and all would be great gainers by the operation.

Let him then look to his cleared land, and study what would be its value if all the manure yielded by his hay, and oats, and corn, and fodder, went back upon the land, instead of being wasted on the road, and if all of that yielded by his wheat and corn remained upon the ground instead of going to Lowell or Manchester, and see if he would not be a gainer by the operation.

Let him then look to his uncleared land, and calculate how much it would cost him to destroy the timber. Let him then calculate the value of the timber, if the factory were near him, and if the blacksmith and the shoemaker, the hatter, and the tanner, the bricklayer and the carpenter, wanted houses; and if a town were growing up around the mill, and its inhabitants wanting pork and meal, and milk, and beef, and flour, and potatoes, and mutton, and see if he would not be a gainer by the operation.

Let him look to the quantity of land upon which this timber stands, and on which he is paying, or losing, interest. Let him then look to the quality of that land, and compare it with that which he now cultivates. Let him calculate how many bushels of potatoes it would yield, and compare their value, when consumed upon the ground, with that of the 300 pounds of cotton now yielded by an acre, and see if he would not be a gainer by the operation.

Let him add all these things together, and see if he would not save all the freights and commissions; even although he obtained no more for his cotton, and paid as much for his cloth. Let him see if he would not obtain the full value of his cotton, instead of, as now, obtaining but one-third of it.

The great cities and towns of the world are built up out of the spoils of the farmer and planter. Looking around in New York, or in Philadelphia, or Boston, it is not possible to avoid being struck with the number of persons who live by merely exchanging—passing from the producer to the consumer—producing nothing themselves. Wagons and wagoners, carts and cartmen, boats and boatmen, ships and sailors, are everywhere carrying about cotton, and wool, and corn, and wheat, and flour, as if for the pleasure of doing it. The man of Tennessee sends his cotton to Manchester to be twisted. His corn goes along with it, to feed the man who twists it. It leaves him worth twenty cents. By the time it is consumed by the Manchester spinner, it is worth, perhaps a dollar. The labourer buys it at that price. The manufacturer gives him a dollar to pay for it, and he charges it to the cloth at $1 10. The corn and cotton become cloth, and the Tennessee man buys it back, paying *five bales for one!* He can sometimes send his corn, but he can never send his potatoes, and the reason why he cannot is, that they are of the class of commodities of which the earth yields so largely that they will not pay freight. The only things he can raise for market are those of which the earth yields little, and that will therefore pay

freight. He raises three hundred pounds of cotton, all of which goes to market, bringing him back but sixty fashioned into cloth; returning nothing to the land of what it drew out of the land, whereas, if he had consumers near him, he would raise almost as many bushels of potatoes, the manure for which would go upon the land to enrich it, and make himself rich. He could then afford to clear, and ditch, and drain, and cultivate the richest land, now covered with timber, or with water.

Why does he not do these things? Why does he not convert the unprofitable consumers, everywhere around him, into profitable ones?* Why does he continue, year after year, to send his grain, or cotton, to the distant mill, instead of bringing, *once and for ever*, the mill to him? The reason may be found in the newspapers every day. Two years since, cotton manufacturers, wool manufacturers, and iron manufacturers were prosperous. Now they are all stopping work. Many are already ruined, and many more are likely so to be. Why is this? Does it arise out of any change in our own affairs? It does not. It arises out of changes abroad. Two years since, England made railroads, and consumption then was large. This year she does not make roads, and consumption is small. Two years since, we built factories and furnaces. This year, manufacturers and furnace-builders are ruined. All of them would be ruined, had they not a Tariff of protection, inadequate as is that of 1846, to give them that protection that is needed to secure them against such changes. Prosperous they would now be, had the tariff of 1842 remained unaltered; and the thousands employed in them would have remained profitable customers for the farmers, instead of being driven over the country to become the rivals of the farmer, increasing the quantity of provisions, of which there is already a redundance.

The capital employed in the transport of cotton is more than would build mills to convert the whole crop into cloth. The mill is saved labour. The transportation is labour lost, never to be regained. The mills once built, the whole of that labour might be applied to the work of production, for

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* The following picture of some of these unprofitable consumers is from a letter to the correspondent of "The New York Herald:"—

"I travelled yesterday over a public road twenty miles, and stopped at nearly every house. They were occupied by what are called 'the poor white people.' I found fifty log-houses on my route. You pass through a forest and come to cleared land. You see on one side of the road a field of corn, say five to ten acres; off a few rods back from the road, amid this corn stands a log cabin, the smoke curling up in blue wreaths even in these hot days. There is a wicket gate opening from the road, through which you pass and follow a footpath until you reach the entrance of the cabin. There is a stone for a step, and you enter. The woman is spinning. She asks you to a seat, which is made of hickory, both uprights and the seat. There are two or three more like it. In the corner of the room is a bed; the fire-place is very large, and the chimney is built of mud outside the hut. There are some nails for hats and clothes. There is a rifle on wooden pins; a shelf, with a few articles upon it, consisting of a broken comb, a Bible printed by the American Bible Society, and a case-knife. In a corner is a barrel. Look into it, and you will find a half bushel of corn meal inside, and over it, on a string, is a piece of bacon. There is a cupboard in the corner; open that, and perhaps you will find a cup and saucer and a plate, and perhaps you won't. This a picture from the life. You ask for the family—'My man is pulling fodder.' 'How many children have you?' 'Six;' and by and by you will see the whole half dozen flaxy-headed children peeping in through the crevices of the hut, for in the summer season, as there are no windows, the filling in between the logs is taken out for air. You wonder how people can live in such a one-room den. Yet they do live, and get on very well. They keep a cow sometimes, a few pigs to make ham and bacon, and they raise corn, wheat, and oats. The cabin is worth twenty dollars, if it was to be bought."

the lost labour of the hands upon the plantation, and of the "poor white people," everywhere throughout the South, is more than would be required for the work of conversion. Protection seeks to enable the planter to save this labour and accumulate capital.

It is said to be "a war upon labour and capital;" but it would here certainly seem to be, what its name denotes, protection to the producer of food and wool against a system which compels him to give the use of fifteen dollars of capital in exchange for the use of one. Its object is that of promoting concentration. That of the system falsely called free-trade is to promote dispersion. The last twelve months have witnessed the expulsion of many thousands of men, and many millions of capital to California, not one-tenth of which will ever return. One of the papers of the day states that

"Considerable excitement has been created here (New York) among those who have made shipments of merchandise to California, by the receipt of letters from commission houses in San Francisco, containing account of sales. It appears that the charges have, in several instances, used up entirely the proceeds of the sales. We hear it stated in dry-good circles, that one of our largest auction-houses sent out over two hundred thousand dollars' worth of dry-goods last winter, for which, up to this time, they have received no proceeds."

Hundreds of ships are now in the Pacific, doing nothing and earning nothing, when they might be carrying cotton, and we are now building other ships to replace them. The capital now invested in those ships and in California would have built mills for the conversion of half the cotton of the South, and furnaces for the production of as much iron as is produced in Great Britain. For all this waste of capital the farmer and planter pay, for the harmony of interests is so perfect that the losses of the ship-owner and manufacturer are invariably borne, in largest proportion, by them.*

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* The following estimate of the quantity of labour and capital *lost by ourselves* and wasted in California, is from the New York Herald, and is not far from the truth:—

"It is estimated that about 500 vessels had, up to the 1st of November, arrived at San Francisco, from the United States and Europe, and that at least 100,000 people were, at that time, in California. The average cost of outfit for each person cannot be less than $200, which makes an aggregate of $20,000,000. It will cost an average of at least $300 per annum for each to live. This amounts to $30,000,000. This makes a total of $50,000,000, for the bare outfit and provisions for one year. The 500 vessels which had arrived, at the latest date, and the 500 on the way, are worth, on an average, about $10,000 each, which amounts to $10,000,000. The time of each individual we estimate to be worth, on an average, $200—total, $20,000,000. Grand total of outfit, cost of living one year, cost of vessels engaged in the trade, and value of time one year, $80,000,000. This is a moderate calculation, as the actual outlay and absorption of capital, up to this time, will probably amount to full $100,000,000. As an offset to this we have thus far received about six millions of dollars ($6,000,000) in gold dust, from California and the whole Pacific coast. It will be perceived that there is still an enormous balance against California, and that it will be a long time, at the rate already realized, before we shall receive even the sum expended, to say nothing about profits. It is our impression that most of those engaged in the trade would be satisfied with merely the cost of their shipments. Most of them have abandoned all idea of profits, and many of them will never realize a cent: the charges, such as freight, storage, &c., will eat up every mill of first cost. The only product of California, to pay for this immense amount of property, is gold. At present it has no other resource, and we know of none but its minerals. It is now a little more than twelve months since the emigration to California commenced, and there has never been known, in the history of the world, such a movement as has been presented in this. Independent of the hundreds of vessels which have departed from all parts of the world for California, we have nearly a dozen of the finest steamships in the world, regularly employed in carrying passengers and the mail between this port and San Francisco, via Chagres and Panama. Several large steamers are now on the way round, to take their place in the line from Panama to San Francisco, and in a short time we shall have two or three more on the line between this city and Chagres."

The landowners of the world are the great capitalists. The exchangers are the small ones, and yet they and their machinery absorb the chief part of the products of the land, which therefore yields but small return to the labour employed in its preparation for production. Almost everywhere throughout this country it is of small value, rarely exceeding the cost of fencing and buildings. That it may be otherwise, and that landowners may grow rich, it is required that they bring the loom to the cotton, and the anvil to the food, instead of sending the mass of cotton and food, year after year, in search of the loom and the anvil.

How rapidly their capital is capable of accumulating is a lesson that the mass of the farmers and planters of the Union have yet to learn. The first settlement of land involves a large amount of labour; but here, as in many other cases, it is the first step that is the most costly. The land cleared, the farm enclosed, the house built, and the road made, the cost of transportation still absorbs so large a portion of the product that the whole has little value. The making of a railroad doubles it, but the quantity of cloth or iron that can be obtained for wheat or cotton is yet so small that the land has still but little value. To bring the furnace or the cotton mill to the spot, and thus to make a market on the land for the products of the land, requires an amount of labour that is absolutely insignificant compared with the amount already expended, and yet it doubles the value of all around. The sole cause of the difference in the value of land anywhere—quality being equal—is to be found in the proximity to, or distance from, market.

Let us now suppose that during the last twenty years we had annually appropriated a small part of the labour that has been wasted on the road, and a small portion of the food and cotton that have been lost in distant markets, to the building of furnaces and the erection of cotton mills, and that the Southern States now possessed a hundred of the former, each capable of producing 5000 tons of iron, and rolling mills to convert it into bars, and the latter capable of converting into cloth 500,000 bales of cotton, and that the spare labour of their hands had been employed in grading roads upon which they had been for years laying the bars produced in their own furnaces and mills, and see what would be the result. Throughout the whole South there would have been a market at hand for a large portion of their products, while every part would be enjoying facilities for transporting its surplus food or cotton to distant markets at one-fifth of the present cost, and thus the land of every part would have been acquiring value, to an extent almost incalculable. The planting States have 400,000,000 of acres, and the addition of ten dollars an acre to the present value would amount to four thousand millions of dollars, while the cost of building furnaces, rolling-mills, and all other of the machinery necessary to have covered those States with roads, and filled them with machinery to enable them to convert into cloth as much cotton as would free them from all *dependence* on the movements of distant markets, making them independent, would not have been fifty millions, and yet, large as it may seem, the return would have been an augmentation of capital counting by thousands of millions.

An addition of one dollar an acre in the annual value, or rent, of a plantation, would add more than ten dollars an acre to its value. The farmer now sends his corn to market and brings back twenty cents, yet the consumer pays fifty. He brings back iron that costs him 300 bushels per ton, yet the producer of that iron obtains but 25. Had the iron and cotton manufactures been allowed to develope themselves throughout Virginia, Tennessee, Alabama, and other of the Southern States, 60 bushels of corn, or half a bale of cotton, would this day pay for a ton of iron, and if that were the case, what would now be the value of land? Would it not be greater

than at present by more than twenty dollars an acre? If so, would not that amount to eight thousand millions of dollars? It is almost inconceivable how trivial is the amount of capital required to double, treble, or quadruple the value of land, after the first and most expensive process, that of the first occupation, has been performed.

Let us now look to the state of things in England. The great field of employment for capital is the land. The number of acres in the United Kingdom is sixty-four millions. An expenditure of labour to the extent of only twenty shillings per acre would absorb the enormous sum of three hundred millions of dollars, and an average of three guineas per acre would absorb one thousand millions; whereas the whole capital employed in the cotton manufacture is but thirty-four millions of pounds,* or about one hundred and sixty millions of dollars, and that invested in shipping is but little more. Now, if we suppose one-half of the cotton machinery to be for the domestic trade, and the other half for the foreign, and one-half of the navigation to be for home purposes, including the procuring of tea, coffee, sugar, silk, &c., for the home market—and the other half to be for other purposes, the result will be that the market for capital provided by the foreign trade is but one-sixth of what would be required for agriculture, at only three pounds per acre. If we take the average duration of ships and machinery to be ten years, we have an annual demand by the foreign trade for three millions only, being equal to less than one shilling per acre annually invested in the improvement of land. No one who is familiar with the condition of Irish agriculture, and of a large portion of that of England and Scotland, can doubt that the expenditure of twenty times that amount in the gradual improvement of cultivation, and in the improvement of communications would be attended with a large return. Land, however, is everywhere centralized in the hands of great owners, and cultivated by great farmers; and the consequence is, that capital does not find employment in its improvement, and has to seek a vent in manufactures and commerce, which, together, afford a field so small, that competition is great and the rate of profit is very low.

The savings of Ireland are forced into England, because of the absence of all modes of local investment. From 1821 to 1833, no less than ten millions of pounds were thus transferred; and later statements show that the course of events from that time to the present has been nearly the same.

Of the deposits in the Scottish banks, a large portion is habitually invested in the funds; and thus, local investment being prevented, there is a constant pressure upon the centre, which deprives the capitalists, great and small, of remuneration.

The natural consequence of this absence of facilities for applying capital at the places at which it is owned, is the accumulation of large quantities in London, for which a market is to be sought at low rates of interest. Foreigners are then invited to borrow money—that is to say, to buy cloth and iron on credit—and then when by this process the unemployed capital has been scattered to different parts of the earth, there comes a crisis, and the debts are called in, with bankruptcy to the debtors of England, and wide-spread ruin among the merchants of England. Such is the history of the period from 1835 to 1842, ending in bankruptcy and repudiation. Such is the history, so far, of the tariff of '46. We have bought from thirty to forty millions of dollars of goods on credit, and the day of payment must come.

By a succession of operations of this kind all the customers of England

* McCulloch's Statistics, Vol. I. p. 78.

had been ruined, and there remained, in 1842, no foreign country that could be trusted. Capital appeared superabundant. Interest was very low, and there appeared no prospect of improvement. Every thing was prepared for a great home speculation, and the railroad soon became the hobby of the day. It was a great lottery, in which peers and paupers, bankers and half-pay officers, clergymen and pickpockets, bought tickets, all certain of drawing prizes. Five thousand miles of road have been made, at a nominal cost of £148,000,000,* but the larger portion of this vast sum has been merely a transfer from the pocket of one gambler into that of another, as may be seen from the following statement. The mere Parliamentary expenses† of the

Blackwall railway amounted to, ...	*per mile*,	$70,000
Those of the Manchester and Birmingham to . .	"	25,000
And those of the Eastern Counties' road to . .	"	23,000
The amount allowed for land by the Manchester and Birmingham, was	"	80,000
Eastern counties	"	75,000

In this manner, the cost of the works executed was swelled to $250,000, $300,000, $400,000, and in one case to $1,400,000 per mile, the consequence of which has been that while the designing few have been enriched, the many have been ruined, and England is covered with the wrecks of this disastrous speculation, which owed its existence to the fact that the whole policy of the country tended to force capital into commerce and manufactures, which afford the smallest field for its employment, and to drive it from agriculture, the only one that affords a field constantly enlarging, and in which an almost unlimited amount of labour and capital might be employed at a constantly increasing rate of return.

The manner in which the system operates upon the moneyed capitalist here is now to be examined. In 1835, as we have seen, the natural outlets for capital were closed. We ceased to build mills, furnaces, or rolling-mills, and the building of ships and houses was diminished. The necessary consequence of this blocking up of capital was, that the price of dividend-paying stocks rose, and this produced a desire to create new stocks with the then idle capital. Roads and canals were commenced at the west and south-west, banks were created, and the capitalist was led to believe that he was to obtain ten or fifteen per cent. per annum for the use of the means that he thus placed under the control of strangers. The day of settlement, however, arrived. England claimed payment for the cloth and iron; but the means by which she might have been paid were scattered to the four winds of heaven, invested in unproductive roads, and in banks that were ruined by the failure of their debtors; and *thus were wasted as many millions as would have built furnaces to produce quadruple the iron we ever yet have used, and converted into cloth all of the cotton we then produced.* The mass of smaller capitalists were ruined, but the few were made rich.

We are now moving in the same direction. Money is said to be cheap; that is, there is much in bank at the credit of depositors, for which they are receiving no interest. The papers of the day informs us that Western city stocks and bonds are coming into demand; and here we have the beginning of a movement similar to that of 1836. In a little time it will be judged expedient to create banks at a distance, and then a little while and England will claim payment for the cloth and iron we are now buying on credit, and then will be re-enacted the scenes of 1842.

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* Herapath's Railway Journal, quoted in North British Review, August, 1849.

† The Parliamentary expenses of 1845, '6, and '7, were upwards of £10,000,000, or $50,000,000.—*Ibid.*

If we desire to know who are the persons from whom is derived the power thus to derange the movements of the world, it is needed only to look at the prices of cotton and yarn between the periods of 1844 and 1848, as shown in a former chapter. The farmers and planters of the world first give away their products, then borrow a part of them in the forms of cloth and iron, and when ruined by the operation are denounced as bankrupts and swindlers.

The well-understood interests of the capitalists of all nations are in perfect harmony with each other. Whatever tends to diminish production in one, tends to diminish the return to capital in all. The British system is "a war upon the labour and capital of the world;" upon her own as well as that of other nations. Its effect is to keep the return to the capitalist at a very low point, and often to deprive him altogether of return, and all because it tends to compel the labourer to underwork the Hindoo and the Russian, and to sink him to their level. Therefore it is that labourers and capitalists of other nations are forced to resort to measures of protection. The immediate effect of the adoption of efficient and complete protection, as a national measure, would be the transfer to this country of an immense body of capital in the form of machinery, followed by a gradual rise in the rate of profit abroad, which would tend to attain a level with our own. *That* capital, once here, could not be reclaimed. Like the men we import, it would stay, and the effect that would follow necessarily from its transfer would be an increased import of men—of all, the most valuable species of capital, though now, in Europe, the most despised.

To attain perfect freedom of trade, we need to raise the labourers and capitalists of Europe to a level with our own. The colonial system tends to depress and destroy both.

THE POWER OF FASCINATION IN SERPENTS.

THERE is a very general opinion, which has been adopted, even by some eminent naturalists, that several species of serpents possess the power of fascinating birds and small quadrupeds, by fixing their eyes upon the animal, so that the poor victim is unable to escape from his formidable enemy. Dr. Barton, of Philadelphia, published, in 1796, a "Memoir concerning the fascinating faculty which has been ascribed to the Rattlesnake, and other American Serpents," in which he maintains that this supposed power of fascination does not exist, and offers some ingenious explanations of the origin of what he considers a popular mistake. Our readers will, we think, be interested by an extract or two from this work:

"In conducting my inquiries into this curious subject, I endeavored to ascertain the two following points, viz., first, what species of birds are most frequently observed to be enchanted by the serpents? and, secondly, at what season of the year has any particular species been the most commonly under this wonderful influence? I supposed this would furnish me with a clue to a right explanation of the whole mystery.

"Birds have an almost uniform and determinate method of binding their nests, whether we consider the form of the nest, its materials, or the place in which it is fixed. Those birds which build their nests upon the ground, on the lower branches of trees, and on low bushes (especially on the sides of rivers, creeks, &c. that are frequented by different kinds of serpents,) have most frequently been observed to be under the enchanting faculty of the Rattlesnake, &c. Indeed, the bewitching spirit of these serpents seems to be almost entirely limited to these kinds of birds. Hence we so frequently hear tales of the fascination of our cat-bird, which builds its nest in the low bushes, on the sides of creeks, and other waters, the most usual haunts of the black snake and other serpents. Hence, too, upon opening the stomachs of some of our serpents, if we often find that they contain birds, it is almost entirely those birds which build in the manner I have just mentioned.

"The Rattlesnake seldom, if ever, climbs up a tree. He is frequently, however, found about their roots, especially in wet situations. It is said that it is often seen curled round a tree, darting terrible glances at a squirrel, which after some time is so much influenced by these glances, or by some subtle emanation from the body of the serpent, that the poor animal falls into the jaws of its enemy. Is the animal's fear and distress a matter of any wonder? Nature has

taught different animals what animals are their enemies; and as the Rattlesnake occasionally devours birds and squirrels, to these animals he must necessarily be an object of fear. Sometimes the squirrel drives away the serpent, but occasionally approaching too near his enemy,

[Baltimore Oriole defending her Nest from the Black Snake.]

he is bitten or immediately devoured. These hostilities, however, are not common.

"In almost every instance, I have found that the supposed fascinating faculty of the serpent was exerted upon the birds at the particular season of their laying their eggs, or of their hatching, or their rearing their young, still tender and defenceless. I now began to suspect, that the cries and fears of birds supposed to be fascinated originated in an endeavor to protect their nest or young. My inquiries have convinced me that this is the case.

"I have already observed, that the Rattlesnake does not climb up trees; but the black snake and some other species of the Coluber do. When impelled by hunger and incapable of satisfying it by the capture of animals on the ground, they begin to glide up trees or bushes upon which a bird has its nest. The bird is not ignorant of the serpent's object. She leaves her nest, whether it contains eggs or young ones, and endeavors to oppose the reptile's progress. In doing this, she is actuated by the strength of her instinctive attachment to her eggs, or affection to her young. Her cry is melancholy, her motions tremulous. She exposes herself to the most imminent danger. Sometimes she approaches so near the reptile that he seizes her as his prey. But this is far from being universally the case. Often she compels the serpent to leave the tree, and then returns to her nest.

It is a well-known fact, that among some species of birds, the female, at a certain period, is accustomed to compel the young ones to leave the nest; that is, when the young have acquired so much strength that they are no longer entitled to *all* her care. But they still claim some of her care. Their flights are awkward, and soon broken by fatigue: they fall to the ground, when they are frequently exposed to the attacks of the serpent, which attempts to devour them. In this situation of affairs, the mother will place herself upon a branch of a tree, or bush, in the vicinity of the serpent. She will dart upon the serpent in order to prevent the destruction of her young; but fear, the instinct of self-preservation, will compel her to retire. She leaves the serpent, however, but for a short time, and then returns again. Oftentimes she prevents the destruction of her young, attacking the snake with her wing, her beak, or her claws. Should the reptile succeed in capturing the young, the mother is exposed to less danger. For, while engaged in swallowing them, he has neither inclination nor power to seize upon the old one. But the appetite of the serpent tribe is great: the capacity of their stomachs is not less so. The danger of the mother is at hand when the young are devoured; the snake seizes upon her; and this is the catastrophe which crowns the tale of fascination!

"Some years since, Mr. Rittenhouse, an accurate observer, was induced to suppose, from the peculiar melancholy cry of a *red-winged maize-thief*, that a snake was at no great distance from it, and that the bird was in distress. He threw a stone at the place from which the cry proceeded, which had the effect of driving the bird away. The poor animal, however, immediately returned to the same spot. Mr. Rittenhouse now went to the place where the bird alighted, and, to his great astonishment, he found it perched upon the back of a large black snake, which it was pecking with its beak. At this very time the serpent was in the act of swallowing a young bird, and from the enlarged size of the

reptile's belly, it was evident that it had already swallowed two or three other young birds. After the snake was killed the old bird flew away. Mr. R. says that the cry and actions of this bird had been precisely similar to those of a bird which is said to be under the influence of a serpent. The maize-thief builds its nest in low bushes, the bottoms of which are the usual haunts of the black snake. The reptile found no difficulty in gliding up to the nest, from which, most probably in the absence of the mother, it had taken the young ones; or it had seized the young ones after they had been forced from the nest by the mother. In either case the mother had come to prevent them from being devoured."

ON THE FORM OF FARM-HORSES.

THERE is scarcely a subject on which there prevails an impression more erroneous and vulgar, than in respect to the *points that constitute value in the form of "Horses for all work!"* Many men judge of horses as they judge of beef cattle—seeking to get the greatest weight of flesh and fat for their money, whereas, the object should be strength and spirit; and then, the less flesh and fat the better.

The following corresponds so well with what we have often said on the same subject, that once for all we may commend it to every farmer's attention. It applies to other countries and societies besides the English. True, for heavy draft, you want *"weight in the collar,"* but that is only another word for wanting strength.—*Edit. P. L. & A.*

All intelligent scientific observers have stated their opinion of the very undue preference that has been constantly given to the *heavy carcases of the stallions for farm purposes* that have been exhibited at the shows of the Royal English Agricultural Society, since the commencement of that institution; and it must be acknowledged that the observation is very just and true, and appeared most conspicuously at Newcastle in 1846, and at Norwich in July of the last year. The first prizes were awarded to short, heavy, fat carcases, wherein the only properties were weight of offal and an abundance of muscular fibre, loading every exertion and encumbering every step of the animal; and at their sides have stood the lengthy, active carcases that befit the work of the farm, and the spirit that moves and impels the whole machinery. There cannot possibly be a greater mistake than having heavy fat animals for the purposes of the farm. The very first point of all superior breeding is, to get quit of the superfluous offal, both in fattening animals, and in those for the use of draught and the road. In the former case, the articles are useless to the butcher; and in the case of horses, the animal is burdened with a superfluous weight, which promotes perspiration, and debilitates the muscular action. The body of a farm-horse should be comparatively light, round—the offal must not show any suspension below the level of the fore ribs, but rather rise upwards. The thighs must be deep and sinewy, and the legs flat in the bone, and little hair at the heels. The neck long, lofty, and well arched; the head small, and tapering to the muzzle. The whole animal should be a "racer," enlarged to the size that is capable of bearing the burdens and fatigues of farm-work. Very widely different are the figures to which the prizes are given. The sole object seems to have heavy fat carcases fit for the shambles, without any regard to spirited action or quickness of step. Heavy bodies are killed by their own movements, and by the effervescence that takes place in such a collection of fleshy materials. Muscle and not fibre is required in the horse, and the latter must be present only in the quantity that is sufficient to bind the muscular frame in the due elasticity and vigour. Any greater quantity only creates a burden, and forms a useless appendage. The best farm-horse would be got by a cross between the largest blood-horse and the choicest country mare that can be found. The size must be large on both sides, and the figure handsome. The progeny will possess both strength and action, which when combined form the "ne plus ultra" of all animal perfection that is meant for the purposes of exertion. Such an animal will wonderfully contrast the prizes of our agricultural shows; but of the side of superiority no doubt would for a moment remain. *D. J.*, 1849.

Quality of Manure.—It is generally understood that the following is the order in which domestic animals stand as regards the quality of their manure, beginning with the best:—The pig, horse, sheep, fat ox, store cattle, milch cow; but it will easily be understood that the quality of the manure must depend upon that of the food. The elements of bacon, taken from the ordinary food of fatting pigs, you will at once see must have something more valuable as manure than that which is left of Grass when the elements of milk are removed from it.

COMPARISON OF GUANO WITH OTHER MANURES.

BY DAVID BARCLAY, M. P.

To W. Miles, Esq. M. P.

My Dear Sir: The very extensive use of Guano as a manure, and the prospect of very large supplies from Peru and the West Coast of Africa, induced you to recommend to the Council of our Society that some of its members should undertake to test the relative value of the different kinds, including Potter's artificial Guano, as compared with farm-yard manure; and Humphrey's compound was subsequently proposed to be tried at the same time. I undertook, for one, to make these experiments. We were instructed to sow Skirving's Swede, and to apply 20 tons of farm-yard dung to the acre, 3 cwt. of Guano, and such quantities of Potter's Guano and Humphrey's compound as the proprietors might desire.

The land which I selected for making these experiments is a light, flinty loam, of uniform quality, with a chalk subsoil. Long strips of an acre each were measured with exactness, and admitted of 16 rows of plants in each strip, at the distance of 26 inches between the ridges. Four acres were drilled on the 22d of June; the fifth acre, with Humphrey's compound, was delayed for want of seed till the 26th. Instead, however, of 20 tons of dung, as proposed, only 12 tons were applied; of the African and Peruvian Guano, and of Humphrey's compound, 3 cwt. each; and of Potter's artificial Guano 4 cwt. by his desire: all were mixed with 9 cwt. of ashes, and drilled in with the seed on the Scotch system. The 5 acres were twice hoed. About the middle of January, 1845, 2 entire rows out of the 16 in each strip were raised, trimmed, and weighed, and the weights, multiplied by 8, must have given the weight per acre with accuracy, as, owing to the great length of the rows, no material departure from exact results could take place. The following table will show the cost of each manure, the produce per acre, the value estimated at 15s. per ton, also the cost of each manure, and its application per ton of roots.

The long drought which we experienced will account for the small produce per acre, and may possibly have exercised a greater influence on one description of manure than on another; I cannot, therefore, consider my experiments so decisive of the relative value of the manures as if the season had been more propitious: but should the trials undertaken by others correspond in their results with mine, information will be elicited which may be useful to the agricultural body. It was remarked that the drought appeared to have the most influence on the acre manured with dung, turning the leaves more yellow than on the other strips dressed with Guano; and until the weights convinced us of our mistake, we were under a strong impression that the guanos had beaten the dung. There remains for us to learn the value of these manures upon the succeeding crop of barley, for which purpose the 5 acres will be carefully distinguished, and the produce of each accurately measured.

I remain, sir, yours, &c. &c.,
DAVID BARCLAY.

Eastwick, February 12, 1845.

Account of Experiments *as to the relative Value of Farm-yard Manure, African Guano, Peruvian Guano, Potter's Guano, and Humphrey's Farmers' Compound, conducted on Eastwick Farm, in the County of Surrey.*

No.	Description of Manure.	Quantity used per Imperial Acre.	Cost of Manure, Carriage, and Application.	£ s. d.	Produce of trimmed Swedes per Acre. T. cwt. qr. lb.	Value of Produce at 15s. per Ton. £ s. d.	Cost of Manure and Application per Ton of Swedes. s. d.
1	Farm-yard..	12 Tons.....	At 5s.	3 0 0	9 7 3 20	7 1 0	9 4
			Carriage.	1 4 0			
			Spreading,...	0 4 0			
				4 8 0			
2	African Guano...	3 Cwt..	At 6*l.* 10*s.* per ton...	0 19 6	8 2 0 0	6 1 6	2 8½
			Sowing,....	0 2 0			
				1 1 6			
3	Peruvian Guano..	3 Cwt..	At 10*l.* 10*s*...	1 11 6	8 0 0 0	6 0 0	4 2¼
			Sowing, ...	0 2 0			
				1 13 6			
4	Potter's Guano...	4 Cwt..	At 12*l.*.....	2 8 0	8 17 2 8	6 13 2	5 7½
			Sowing, ...	0 2 0			
				2 10 0			
5	Humphrey's Farmers' Compound.....	3 Cwt.	At 12*l.*, ...	1 16 0	5 17 3 0	4 8 3¾	6 6
			Sowing, ...	0 2 0			
				1 18 0			

On the Mismanagement of Stable-Dung Manure, especially as regards Exposure to Rain.—Whilst, at a vast expense, the farmer is importing bones from the shores of the Black Sea, nitrate of soda from South America, guano from the coast of Peru and from the African coast, he is, in too many instances, negligent of the manure that his stable and stalls supply. This negligence has been pointed out, and emphatically dwelt on, by every recent writer of authority on Agriculture. As regards exposure to rain, and the injurious effects of it on the kind of manure just alluded to, examples of it, in this part of England (Westmoreland), where an unusual quantity of rain falls, are of every-day occurrence, and almost every where to be met with: the instances of neglect constitute the rule; of care and attention, the rare exception to the rule. The farm-steadings here are commonly on declivities; the dung-heap is usually placed on a declivity, often by the side of a road, and, in consequence, after every shower of rain, the water that runs off, percolating through the manure, robs it of some of its most valuable ingredients, especially its soluble salts, and soluble animal and vegetable matter, tending to starve the fields and pollute the roads. I have had the curiosity to collect portions of such drainage, and subject them to examination; and I now propose to give the results, as they show, in a very marked manner, the injurious effect, and how great is the loss to the farmer in consequence. The first portion collected was from a heap of stable-dung, fresh from the stable just before a heavy fall of rain, the accompaniment of a thunder-storm, nearly an inch falling in three hours. The water which ran from the dung-heap was of the color of a weak infusion of coffee, of sp. gr. 1002, to pure water as 1000. With the peculiar smell of stable-dung, it had a just perceptible smell of ammonia, which was rendered more distinct by the addition of lime. Under the microscope, it was found to contain, besides a fine granular matter, and many minute vegetable fibres and scales, particles resembling grains of pollen, and two or three different kinds of animalcules. Evaporated to dryness, it yielded 2·6 per 1000 of brown matter, which partially deliquesced on exposure to a moist atmosphere; emitted a very faint smell of ammonia when mixed with lime, indicating that in the process of evaporation, most of the ammoniacal salt had been expelled, and was therefore carbonate of ammonia; and when incinerated afforded as much as 51·6 per cent of grey ash—48·4 per cent. of the extract having been destroyed by the fire, which may be considered as animal and vegetable matter. The ash was found to contain the sulphuric, phosphoric, and carbonic acids, and chlorine, with potash, soda, lime, and magnesia, chiefly in the form, it may be inferred, of carbonate of potash, phosphate of lime, sulphate of lime, sulphate of magnesia, and common salt. The proportional quantity of the sulphate of lime was large, as was also that of the fixed alkaline salts, whilst that of the phosphate of lime and the magnesian salt was small. The next specimen examined was from a much larger and older dung-heap, after a fall of 1·12 inch of rain in about 12 hours. The fluid was of a darker brown than the preceding, very similar in its appearance under the microscope, of higher sp. gr., viz: 1008, and yet less rich in ammoniacal salts, for when mixed with lime, it gave only a very faint smell of ammonia; and its extract obtained by evaporation, when mixed with lime, had no smell of the volatile alkali. It yielded, on evaporation, 10·4 per 1000 solid matter, similar generally to that obtained from the first portion in its qualities, abounding, in like manner, in salts, and those of the same description. The third specimen collected for examination was from the same dung-heap, after a fall of 2·79 inches of rain, in 24 hours. It differed so little from the preceding, that it is not necessary to describe it particularly. As might have been expected, it was more dilute, its sp. gr. being 1004. The last specimen I shall notice was one procured from the same dung-heap, after four days of dry weather following the heavy rain last mentioned. It was oozing out slowly in small quantity; was of a dark brown hue, nearly transparent, and almost destitute of smell. Under the microscope it exhibited a few particles and fibres, a very few minute crystals, without any animalcules. I had expected to have found it a concentrated infusion of the dung-heap, and, as such, of high specific gravity; but it was otherwise; its specific gravity exceeded very little that of the preceding, and was less than that of the second portion, being only 1005, leading to the conclusion that the manure was nearly exhausted of its soluble matter. The weather, during the four days without rain, was comparatively cold for the season (it was in September), with a northerly wind—the thermometer, even by day, below 58°, and at night once or twice approaching the freezing point. This low temperature must have checked or put a stop to fermentation, which, in its turn, might have prevented the further formation of soluble matter. The infusion mixed with lime indicated the presence of ammoniacal salts; it emitted a pretty strong smell of ammonia; and, judging from the effects of other reagents, its composition was very similar to that of the preceding portions; it probably contained a larger proportion of vegetable matter, humus and humic acid, than the earlier drainings; it gave a very copious precipitate with the acetate of lead. The bearing and application of these results hardly require to be pointed out. As the drainage of the dung-heap exposed to rain contains some of the best—the chief ingredients of active manure, (excepting always the insoluble phosphates,) it follows, that the more the dung is exposed—the more it is subjected to the washing and percolation of rain-water—the greater must be its loss, the poorer and more exhausted it must become; and that shelter from rain is essential as a prevention; such a shelter as can only be well secured by a shed, under which the manure, if too dry, may be watered with the liquid that may have run from it, received into a tank; and be subjected to such treatment, from admixture or otherwise, as has been found by experience likely to render it more efficient. These results, moreover, I need hardly remark, are perfectly in accordance with the experience of intelligent farmers, in many instances on record, of the extraordinary fertilizing effects of irrigation with waters—the washings and drainage of the farm-yard and dung-heap.

[John Davy, M. D. in the Edin. Phil. Journal.—The Oaks, Ambleside, Oct. 12, 1844.

Manure for Onions.—For the information of "J. C. C.," of Exeter (p. 225), I beg to say that last year I had one of the finest crops of Onions I ever saw; they were cultivated as fol-

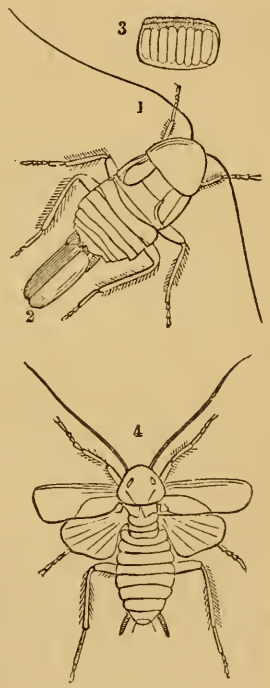
lows:—The ground (which is a stiff loam on the lower oolite), was ridged up before winter. In the middle of March the ridges were levelled, and about 3 inches in thickness of compost was spread and pointed in so shallow as to be only barely covered with earth. The seed was immediately afterwards sown in drills 9 inches apart, and between every five rows was an alley 18 inches in width. Waterings were frequently applied during the early growth of the crop; and it was twice watered with water in which guano was dissolved. The compost consisted of about one-third well-rotted old hot-bed dung, one-third old night-soil, and the remainder of wood-ashes, and black woollen manure from a clothing factory in equal quantities; the latter contained a considerable quantity of oil. The whole had been well mixed together some months before it was applied. [Cultor.

From the London Gardeners' Chron. June 21, 1845.

ENTOMOLOGY.—*The Cockroach, or Black-Beetle (Blatta orientalis).*—This too well-known insect sometimes overruns dwelling-houses, warehouses, mills, and bakehouses, and even ships at sea, to an extent which renders them almost untenable. The same species which infests our habitations is also a complete pest in Russia and Finland, and has made its way thence into Sweden. The Cockroaches are very active creatures, and being nocturnal, exceedingly voracious, omnivorous, and endowed with a surprising fecundity, they become a great annoyance where they take up their quarters. When in excess, their scent is very sickly and disagreeable, and besides defiling whatever they touch in the kitchen or larder, they will nibble the leather of boots and shoes, the binding of books, and even wearing apparel, especially if they be old and dirty. The casks of biscuits and cheese on board ships, are greatly injured by the inroads of these vermin: this, however, is frequently the work of another species, the B. Americana, which is fortunately confined at present to the storehouses along the banks of the Thames; and a smaller species named B. lapponica* is equally destructive.—Even man is not secure in his person from their assaults, for in the West Indies the larger species have been known to eat the toes and fingers to the quick during the period of sleep, and after death they will prey upon the human body like vultures, as may be seen when the charnel-houses at Naples are opened for the daily reception of the dead!

It is undeniable that Cockroaches delight in warmth, preferring kitchen grates, bakers' offices, mills, &c., and we never meet with them during the Winter or cold months of Spring, and although it is impossible to ascertain from what country the B. orientalis was first imported, it no doubt has been migrating from a hotter climate than our own; in all probability it came from the East, and such seems to have been the opinion of Linnæus, from the name he assigned to it. Cockroaches also detest the light, and for that reason we seldom see them in the day time, and as soon as a candle is introduced into a dark kitchen, they scamper off into holes and crevices to hide themselves.

The males have wings, of which the females are destitute; indeed they do not require them, as their province is to rear their young: their bodies, moreover, are often so large and heavy that they would stand in need of much more ample organs of flight than their male companions, which cannot often use them, for I never saw one flying. The females are frequently seen moving about with a large oval mass of eggs, as represented at fig. 1, it is said sometimes for a week, until they can find a convenient spot to deposit them: this leathery case (fig. 2) is of a pitchy color, with a sharp serrated ridge along the back, consisting of 16 points, and on dividing one of these bags longitudinally, it will be found to contain about the same number of elliptical cells (fig. 3); each of these produces a young Cockroach, which is able to run about as soon as it issues from the egg through the serrated suture, which splits for that purpose, and from that time to its death it is feeding, growing, and passing through its different stages of larva, pupa, and imago, with very little change of aspect compared with most of the other orders of insects.



Btatta orientalis is of a deep shining chestnut brown; the orbicular head is bent down and concealed beneath the thoracic shield; the mouth is furnished with an upper and under lip, two strong-toothed jaws, and four feelers*; the eyes are kidney shaped, and excessively finely reticulated, and close to the inner margin is an ochreous membranous spot: the antennæ are like two pubescent bristles, as long as the animal, composed of numerous joints, and inserted in little cavities close to the inner margin of the eyes; the thorax forms a large shield, somewhat triangular, with the angles rounded; in the males

* Curtis's Brit. Ent., fol. & pl. 556.

* Curtis's Brit. Ent., fol. & pl. 256.

(fig. 4) there is an incurved indentation on each side of the disc with a ferruginous line down the center; the scutellum is broad and undefined; the elytra sometimes extend almost to the apex of the abdomen; they are coriaceous, elliptical, and rough, with numerous nervures, the inner edge of one lying over the other in repose, beneath these are folded the wings, which are often shorter, membraneous, with numerous branching nervures, and reticulated; the abdomen is depressed, elongate-ovate, and composed of eight segments; from the base of the last arise on each side two spear-shaped processes, formed of short joints, and to the under side of the same are attached two slender curved appendages; the six legs are strong and longish, the coxæ and thighs are stout; the tibiæ are spiny; the tarsi are more slender and five-jointed, the basal joint being long, the fourth minute, and the fifth terminated by two curved sharp claws. The female (fig. 1) is generally larger, and the thorax smoother; instead of wings there is only a rudimentary elytron on each, with two broad thoracic segments between them; the abdomen is more elliptical before the egg-bag is excluded, and although it has the jointed appendages at the apex, the two little thread-like ones are wanting, and this at once distinguishes the sexes.

The female is very similar to the pupa, and indeed it seems to remain in that state, except that it has the little elytra, which are altogether wanting, I believe, in the pupæ. I may state that the egg-bags often have a hole on one side from which a parasitic fly had issued, called Evania, which possibly we may treat of hereafter.

Of all the remedies, a hedgehog, I know, from my own observations, is the most efficacious, and wool or tow dipped in spirits of turpentine and thrust into their habitations, will kill and expel them, but this unfortunately is attended with danger; sprinkling over by day the spots they frequent would be safer, and probably attended with equal success if persevered in.

[Ruricola.

One Important Cause of Non-Improvement in Agriculture.—I had occasion to visit the son of a friend of mine, at a school of great respectability in a wealthy agricultural district. The master, a very intelligent person, showed me the details of his well-arranged establishment, which was certainly a pattern in every respect. On entering the well-filled schoolroom he observed, that most of his scholars were farmer's sons. Glancing at his library I inquired what books on agricultural subjects it contained? The master seemed struck with surprise, (as if the thought of such books had never occurred to him,) and replied, "With shame I acknowledge, *not one*; but send me a list of such as you recommend, and I will immediately procure them." Now, I apprehend this case might be multiplied by a thousand or more. Can we wonder then that a youth who never heard the word agriculture at school, and who is seldom or never sent into different districts to be taught agriculture as a science, should go home to his parent, and follow his plan of farming—be it good, bad, or indifferent. In all other trades and professions an apprenticeship is considered essential to the acquirement of knowledge; but farming, the most necessary of all trades, is to be left to chance, or rather mischance. A system of uniformity is essential in making a hat, coat, or shoes—there are established educational rules for the church, the bar, and the Senate; but agriculture, the greatest interest of all, on which our very existence depends, economically and politically, is to be like a ship without a compass, tossed about by the ever-varying gale of individual opinion, without a hope of reaching the Port of Perfection. Were a youth ever so much inclined to furnish his mind with comparisons and observations of the various systems of culture in our own different counties, as well as in foreign climes, there is, under the present school system, no opportunity for his doing so; and, no doubt, he would be surprised if told that we are a century at least behind the Chinese in agricultural practice. I hope we shall soon see every school, and in fact, every farmer's parlour, possessing a few sound practical works on agriculture. I presume no man will consider he knows every thing in agriculture—if he does, it is unfortunate for him. Little as I am acquainted with the subject, I am daily convinced that it is full of interest, and of such extent that a lifetime of study and practice would find us on the wrong side of perfection.—*I. J. Mechi's Letters on Agricultural Improvement.*

Bones and Sulphuric Acid.—Mr. Kendle favoured the Council with the following communication:—

"*Fordham, Downham Market, May* 3, 1845.

"I perceive the trials which were made last year with bones and sulphuric acid are creating more and more interest as the Turnip season approaches; I have great pleasure, therefore, in forwarding you, and shall feel obliged by your laying before the Council, an experiment I made upon an acre of fen-land for coleseed. I put two bushels of bone-dust, not ground very fine, into a tub, with 70 lbs. of acid, and added 140 lbs. of water; it was all well stirred together, remained in the tub 24 hours, and then mixed with cinder-ashes in sufficient quantity to make it drill. I tried it by the side of bones at the rate of 8 bushels to the acre, mixed also with ashes; the superiority of the former was most striking, more particularly during the two first months. I may add, I left a few drills without any manure, which of course were throughout the season conspicuously bad. In cost there was little saving, but perhaps I ought not to have given 2*d.* a pound for the acid. I was so well pleased with the result of last year's trial, I am quite disposed to use them again: it is particularly of a cheap rate.

A SKETCH OF BELGIAN HUSBANDRY.

The farms in Flanders are small, the average size being not more than fifty imperial acres. Some are held on lease, others are not. The terms vary from three to fifteen years, some multiple of three as far as fifteen being the duration of a lease. In some the tenants have it in their power to quit at the end of every third year, while the landlord cannot put him away till his lease is out. It is impossible to say what the average rent of the farms is; but so far as I could ascertain, it may be stated at 30s. the imperial acre, for the best soils, exclusive of burdens, which are generally one-fifth of the rent.

The farmers of Belgium are a hard-working class of men—in the habit of laboring their farms, and generally ignorant of every other subject but their profession. But in it truly they show rare sagacity and experience; and though unaided by, and almost despising, the light of science, they discover in some parts of their system of Agriculture a perfection to which science has never yet guided the farmers of this or any other country. When we look back to the ancient grandeur of Belgium, when its cities were the marts and factories of Europe, and consider the consequent increase of population in a country naturally unproductive, we will discover a sufficient stimulus to excite the energies of a people gifted by Nature with an indomitable perseverance and unwearied industry. This disposition, as well as its effects—their Agriculture—has been handed down to the present generation of farmers, and still manifests itself in many operations which the negligent farmer would consider unprofitable, or, at least superfluous; and it is from this praiseworthy industry that Belgium, comparatively a poor country, is considered by strangers as unrivaled in the salubrity of its climate and the fertility of its soil, and that the great part of the kingdom is prevented from returning to its original barrenness.

The number of servants who live on the farm throughout the year may be stated at six to the fifty acres, and these are paid as follows:—The men who perform the work of plowmen and laborers receive 10s. a month with their meat, which the farmers value at 6d. or 7d. a day, thus making the full wages of a man equal to 25s. a month or £15 a year. Their food consists of boiled milk and bread for breakfast, soup or butter-milk and bread and butter for dinner, with potatoes and pork five times a week, and bread and milk for supper. The soup used is composed, according to Mr. Radcliff, of butter-milk boiled and thickened with flour or rye-bread, potatoes, salt fish, various vegetables, and eggs. They work from daylight till it is nearly dark at this season of the year, which, after deducting the hours of rest, will be about ten hours a day. In summer it is longer. The women, who are hired to live on the farm, receive about 4s. 6d. of wages less in the year than the men. It may be observed that almost all the farmers take the same food as their servants. The day-laborers, who are only employed at certain seasons, such as for weeding the crops and engaging in the operations peculiar to flax culture, receive 7d. and 8d. a day, with their meat; and boys and girls have 5d. with their meat. An ordinary working-man will live very comfortably in a town in the south of Belgium, paying £15 for victuals and £2 for the rent of one room for the whole year.

The farm-buildings are generally built in the form of a square, and consist of dwelling-house, byre, barn, stable, servants' sleeping-room, and cart-shed. The middle of the area included in the square is several feet below the level of the houses, and is admirably adapted for saving manure. The greatest cleanness prevails in every department of the steading.

The strength of horses kept on a farm is at the rate of a pair of horses to the fifty acres. And the number of animals supported altogether on the farm far exceeds anything we are accustomed to in this country. This, indeed, is one of the secrets of their farming; and we have no hesitation in saying that, in this particular, they excel the farming of any country with which we are acquainted. The keep of a horse is estimated at 20d. a day. It is generally fed during the winter on oats, straw, beans and hay; and in summer on cut grass. The horses are small, but compact, handsome, with beautiful action, and high-spirited. As no attention has been paid to the improving of their breed of cows, they are not distinguished for any excellences. They answer the purpose of the dairy, for which they are principally kept: they are generally black and white in color. After being for some years in the dairy, they are fattened or sold lean to the butcher, who is generally feeder as well as butcher. The most of the beef used in Belgium is that of these old cows. They have a practice by which they ensure the regular feeding of the calves, which they consider essential to quick fattening. Immediately after they have got their usual quantity of milk, baskets are put on their mouths, to prevent their eating anything in the interval between the feeding times. Few sheep are kept, and these are of the worst description.

The fields are small, and are divided merely by ditches. There is no such thing as a hedge or dyke enclosing a field. These, from the peculiar management of the stock on their farms, are quite unnecessary. But where thorns are used as fences, as around nurseries and gardens, the settings are put very closely together; and, after they have sprouted up a certain length, sticks are run along horizontally, and the young shoots are tied to these, so that in a short time, from the intertwining of the shoots, now grown into branches, the fence becomes quite impenetrable. Under-drainage is never practiced. Much of the soil does not require it: but to facilitate the drying of the fields, and to draw off the surface-water from the plants, a spading of earth is taken out from every furrow, and scattered over the ridge, so that, in a heavy shower, the rain-water finds a ready course to the ditches which skirt the fields.

One of the points in which the Flemings show their skill of management is the attention they pay to the working of the soil. Unless the soil has been thoroughly pulverized by repeated plowings and harrowings, they forbear from sowing any crop. To this, in particular, among

other causes, we must attribute the practice prevalent there of using small quantities of seed, and the beautiful, healthy, and equal brairds which cover the surface in spring. In many places they are not content with the mere use of the plow for this purpose, but resort to the spade also, either in giving an additional depth to the furrow, or in turning the whole soil over with this implement. In the province of Antwerp, we mentioned before that the spade was far more used than the plow for agricultural purposes.

An operation seen daily at present is the picking of the weeds from the young crops. Often the land is raked well before the workers commence their operations, for the purpose, as the farmers allege, of separating the plants, that the weeds may be more easily distinguished. But there is evidently another and more beneficial effect, the raking will have upon the crops. It will loosen any crust that may have been formed on the surface, and thus admit of a more ready access of the air to the roots of the plants and the quantities of manure which are covered by the soil, thus aiding their action by a supply of oxygen. Some may object to the raking, from its exposing the plants to the action of drouth; but the good derived from it, for the reasons stated, is more than sufficient to counterbalance any risk from drouth. After the raking, the workers go over the whole field on their knees, picking out every useless plant. This is perhaps repeated several times in the season, according to the state which the field is in. Flax costs far more labor in weeding than any other crop; and the Flemings spend double time on it from the importance of the crop. A Scotchman, ignorant of Agriculture, in passing through Belgium at this season, and seeing an extended row of women creeping on their knees among the young crops, and looking with the greatest care for injurious weeds, would be apt to extol the industry of the people, while he would accuse his own countrymen of indolence and carelessness in the minute, but no less important, points of husbandry. But he would be doing his own countrymen an injustice, in as far as he would condemn them for their non-performance of what they do in a more economical and as effectual a manner as is to be met with in Belgium; we allude to the practice of drilling grain crops, by which means the weeding of the crop is far more expeditiously accomplished than it is by the plan resorted to in Flanders. This careful attention to the weeding of the grain crops is the more necessary in Belgium, where they are all sown broadcast; the soil is of that class which encourages the growth of annuals, and summer fallow or green drilled crops form rarely a part of their rotations.

The implements used in Flanders are so simple and rude that they scarcely deserve mention. There are two kinds of plows employed; one which is held by one hand only, and is of the rudest construction; and the other, called the Walloon plow, in which the body is attached, by means of its beam, to a framework on wheels, which connects it with the horses, and regulates the different depths to be plowed. In this the mould-board is movable, and is changed at the end of every furrow from one side to the other.

The next subject of which we shall speak is the manures of Flanders; and some conception of the importance of this subject may be formed, when we mention that it regulates, not only the whole, but every individual part of the management of a Flemish farm. The first object and great aim of a Flemish farmer is to make or get manure; and to carry this into effect, nothing that can contribute in the least to increasing a dung-hill is thrown away. He cultivates food for cattle, and ties them up all the year round, that he may not lose any of the manure. He sows rape, and allows it to blossom and ripen, that he may obtain the seed for manure. His ashes-cart and urine-barrels traverse every street in a town, every by-way in the country, to collect this important necessary for his farm. It is in their management here that the farmers of Belgium excel those of every other country, and are thus enabled to extract more from the land than any other body of farmers. They act up, in short, to the true old adage that "Muck is the mither o' the meal kist." The principal manures used are farm-yard dung, urine or liquid manure, rape-cake, and ashes. Minerals are seldom, if ever used, and bones are almost unknown. I alluded before to the comparatively great number of animals kept by the Flemish farmers on their few acres. This they do principally for making manure, to enable them to carry out their system of farming. On a farm of 63 acres, 3 horses and 15 milch cows, and several heifers for supplying the stock were kept throughout the year, besides 6 cows and a few calves that were fattened yearly. In another, of 77 acres' extent, 4 horses and 20 cows, with a requisite number of heifers, were kept, besides from 20 to 30 calves being fattened off yearly; and in a third, of 88 acres, 5 horses and 20 cows, besides heifers and calves, were kept. These farms were all arable, and were situated in one of the finest districts in Belgium. Mostly every crop receives some of this farm-yard dung, which is always well rotted before being applied. One of the peculiarities of the Flemish system is, the extensive and various uses they make of the urine from the animals kept on their farms. Every one has heard of the urine-tanks of Flanders, which are to be found all over the country, at home, and in the fields. They are built in a most substantial manner, and so far under ground, that when they are covered in, the farmer is enabled to cultivate the soil over them. Contracts are generally entered into between the farmers and those in towns who have much of this at command, such as brewers, distillers, &c., who fatten animals from the refuse of their works. £2 ($10) is *commonly given for the urine of one animal for a year.* The farmer, at stated periods, conveys, by means of barrel-carts, what is collected in towns to his subterraneous receptacles at the corners of his fields, to be ready for the seed time. The crop to which it is principally applied is flax; and then they dissolve in it rape-cake, which renders it a most powerful manure. After the flax-seed has been sown and covered in, and rolled, so that the surface is made quite smooth, they proceed to apply this mixture. It is applied in the following manner:—Five men are employed altogether, two to pump, two to scatter it, and one to drive it. A rectangular piece of ground, thirty yards in breadth, is measured off across the ridge; this is sub-divided into six portions of five yards each. The field was laid off in ridges of ten yards. Six wooden vessels are filled, and placed in the middle of a ridge, at a distance of five yards from one another; so that the contents of each vessel, which is about the size of a potato firlot, is the allowance for

every fifty square yards. There is nothing in which they manifest such economy as in the saving of this material, which they prize as a most valuable assistant to their labors. Rape-cake, besides being applied, as mentioned above, with the liquid manure, is also used in a dry state. The rape is cultivated principally as a manure, and is used extensively where the cropping is very severe. Ashes are never used but as a top-dressing to clover; but the traffic which is carried on in them, between Holland and Belgium, is sufficient to form a distinct trade with a certain class of merchants in Belgium. The farmers in Belgium set a high value on them, and place so much dependence on them for the success of their clover-crop, that (I understand from what I have read) there is a current saying among them, that "He who buys ashes for his clover-crop, pays nothing; but he that does it not, pays doublé." It is really surprising that this manure, which has been proved to be so efficacious by a class of experienced farmers like the Flemish, has never yet been tried, or at least sufficiently tested, in Scotland. I believe some were imported in the beginning of this year by Messrs. John Mitchell & Co., in Leith; but I am not aware that they have met with the reception we would anticipate from the well-known successful results of their application in Belgium. There is nothing so much wanted at present, in the Agriculture of Scotland, as a good lasting top-dressing for clover. The failures in this crop have been frequent of late, and the effects of nitrate of soda last only with the crop to which it is applied, while sad disappointments have been experienced in the use of gypsum. But before recommending an extensive use of this material, I would suggest a few comparative trials to be made with it, gypsum, soot, and other substances; for if the failure of gypsum arose from there being a supply of it already in the soil sufficient for the growth of the plant, an application of Dutch ashes might be attended with a similar result, as the great proportion of the ingredients of the ashes are salts of lime, with the useful addition, however, of some salts of soda. Some attribute their great effects in Belgium to the lime which they contain, as few of the soils there have any amount of lime in their composition. They are applied in different quantities to the soil, from ten to thirty bushels an imperial acre.

The crops raised in Belgium are wheat, oats, rye, flax, potatoes, rape, and clover, as principal; and, as secondary, turnips, carrots, buckwheat, tobacco, and spurry. The farmers consider flax and rape the best paying crops they cultivate, and they are the most exhausting; hence the enormous quantities of manure given them.—The rape is sown in July, transplanted in September, and cut in June of the next year. The clover, which is grown for seed as well as for food for cattle, is an important crop with the Flemish farmer. He is not particular among what he sows it. We find it growing amongst flax, wheat, oats or rye. There are two varieties of rye used, winter and spring. The winter variety is almost always sown after potatoes in December, and some of it is cut green in spring, before the clover is ready for cutting. It thus answers the purpose of early tares in this country. Another crop is taken the same year, after it is cut. The ground is plowed several times for potatoes. When the last plowing is finished, the furrows of which are about seven inches wide, one man walks up one of the furrows, and, with an instrument similar to that used for picking up turnips, makes a hole, into which a boy drops the cutting of a potato.—Eight inches farther on, another potato-set is put, in making the hole for which he draws the soil over the previous setting. This he does every second furrow, so that the distance between each row of potatoes is not more than fourteen inches. One man and a boy do about 450 yards in this manner in an hour. The turnips are almost always taken as a second crop in the year. Immediately after the rye is cut, they begin to prepare the land for turnips; and, by the powerful agency of the liquid manure, a beautiful braird is obtained in a few days. The turnips have attained a pretty good size when they are pulled, and, with the potatoes, form the winter food for the animals on the farm. Carrots are often sown with flax, so that they are enabled to have two crops the same year from the land; for by the time the flax is pulled, the carrots are considerably advanced. This method of double cropping is very frequent in Flanders, and is another instance of what, by economy of manure and a judicious application of it, they are enabled to produce from the soil.

The next subject which comes naturally after this is the rotation of crops practiced in Flanders. I was prepared, before crossing the channel, to encounter some little difficulty in this subject, from having read of the great variety of rotations to be found there. Every field, Mr. Radcliff tells us, has its own rotation. But the four, five, or six years' course to which we are accustomed in this country, made me form but a faint idea of the difficulties of comprehending the Flemish course; and therefore, when I began to study them, these exceeded my greatest anticipations, and every day that I renewed my inquiries but plunged me into greater perplexities. I could perceive no fixed principle on which they founded their constantly varying rotations. The same farmer would give me one day one rotation, and the next another totally different from yesterday's, as the rotation he practiced on his farm; and were I to transcribe all the various systems I jotted down in my note-book, as those followed on farms within the narrow compass of a few miles, I would fill as many pages as this short sketch of Belgian farming would require. With such conflicting statements, and with no prospect of unraveling the mystery, I began to solace myself with the thought that the Flemings had no such thing as a rotation; that they knew the value of a change of crops each year, and therefore they practiced a succession rather than a rotation of crops. If they are rotations, it is difficult to tell where they commence and where they end; and they are, besides, extremely long. The principle they seem to go upon is, that the same crop shall not be taken two successive years from the same land. And on examining my heterogeneous mass of rotations, I have been enabled to trace out the few following facts:—That wheat and rye almost always succeed potatoes; and rye, potato wheat: the place of flax seems to be after oats, and before wheat or rye. Clover is sown with any of the principal crops. Rape seems to succeed oats or rye. I think I cannot do better than conclude this part of the subject in the words of Mr. Radcliff:

"In Flanders they would consider their industry and their manure inefficacious without the aid of a precise and well-regulated rotation hence the variety of successions which we ob

serve at every variation of the soil. They have been farmers time out of mind, rotation farmers for centuries: *there is not a cultivated acre, the proprietors of which are not matter of notoriety; and according to those properties, the most suitable succession and the most profitable application of manure have been long since resolved on, and are now invariably practiced.*"

It may not be out of place here to introduce the management of a farm in the high country, or Walloon district. The farms there are much larger than in the low country: 150 acres are there considered a small farm, and many of them are 1,000 acres in extent. The size of the farm about which I obtained most information was 200 acres. The whole of it was under the plow, but twelve acres of meadow. There were only three plows used: but twelve horses were kept, and used for farm work alone. The cause of this great number of horses is, that they never put fewer than four horses, and often six, into their wagons. They have, besides, twelve young horses of different ages, and fifteen cows, which is the whole of the stock kept on the farm. The rotation is generally potatoes, wheat, rye, oats, with clover sown with one or other of them. When we speak of this being the rotation, we do not mean that it is followed with unaltered regularity; for the most profitable crop here is wheat, which the farmer endeavors to grow on a third of his farm. They are near lime here, of which they avail themselves, by applying considerable quantities to the soil. I saw some applied as a top-dressing to young clover. Ashes are also used for the same purpose; but they are much redder in color than those I saw in the low country. The coal burnt here is always mixed with clay, to bind the pieces together, as it is all in small pieces, the largest not being larger than a hen's egg. This may cause the red color in the ashes referred to. They are not so careful of their manure as in Flanders, nor does the same attention seem to be paid to the land. Wages are much the same as those mentioned before.

This is a rough outline of Belgian farming, from personal observations there. I must admit that there is much that might be very profitably introduced and mingled with Scottish husbandry. A little more latitude and variety in our rotations would, while it would increase our productions, benefit the soil. But such a change would have to be introduced with caution, as otherwise it would shake the whole fabric of our Agriculture, which rests so firmly on its present foundation; and while we would cull out the excellences of Flemish farming, and engraft them on our own system, we would not commend it as a whole. And he who would attempt to introduce it into this country, either as a whole or in certain of its parts, would not only expose himself to ruin, but prove himself ignorant of the different states of the two countries, and of the first rudiments of good farming. P. M'L.

[Jour. of High. and Agri. Society of Scotland.

ON THE ATMOSPHERE OF STABLES.

THE frequent and violent exertions which man requires of the horse, renders it a matter of the highest importance that the animal's physical condition be as perfect as skill and attention can secure; and as there are no organs of this noble animal so severely taxed, during the performance of either fast or heavy work, as the organs of respiration, it is obvious that too much attention cannot be given to all circumstances which tend to secure perfection in the condition of that delicate apparatus which plays so prominent a part. A pure and uncontaminated atmosphere, in all respects suited to the process of respiration, is, therefore, a *sine qua non*: one cannot help, for these reasons, expressing surprise at the almost universal inattention to stable ventilation, which so lamentably prevails in even many of our first-class establishments. But there is no circumstance connected with domestic life that appears to me more extraordinary than the almost universal want of attention to scientific arrangements in the construction of modern buildings of every description, both public and private, from the largest theatre, or assembly hall, down to the cottage of the most humble peasant. It is not, therefore, wonderful that gross errors may be discovered in the tenements devoted to the accommodation of our domestic animals. That these occur to a much greater extent than many intelligent persons are aware of, I shall presently show. I hope I may confidently presume that most educated persons are aware that air once breathed by an animal is, by the simple process of respiration, converted into a deadly poison, and, therefore, should be instantly removed from its presence, and replaced by a proper supply of a pure and wholesome air. It is well known that the oxygen of the air is absorbed, and carbonic acid gas is thrown out at each expiration—a gas which neither supports life nor combustion: of the truth of this, the unhappy fate of the unfortunate sufferers in the Black Hole of Calcutta but too painfully demonstrates. I could cite, were it necessary, numerous familiar illustrations of this subject, but I have no doubt the following sample will serve to inform such of your readers as may not hitherto have given especial consideration to theories of respiration, and who are, therefore, unaware of the importance which attaches to the subject.

All have heard of the fatal accidents that frequently occur in breweries, from persons incautiously descending vats while these are surcharg-

ed with the products of fermentation. It is the carbonic acid gas which kills the individual in this case; and who is not aware of the danger of descending close, deep wells, where foul air has accumulated, and rendered the atmosphere obnoxious to human beings? Again, carbonic acid gas proves to be the baneful agent: few, perhaps, are cognizant of the fact, that if a bird be suspended from the roof of a closely-encompassed bed, the creature is speedily put to death—it is poisoned by exposure to the carbonic acid gas—the natural product of the respiration of the persons occupying the bed! Although this gas is naturally heavier than common atmospheric air, it nevertheless, when heated by the process of respiration, becomes much lighter, ascends, and occupies the space nearest the roof of the chamber where it may have been produced; so that persons near the floor, having a plentiful supply of cold air, may suffer no inconvenience, although they, most assuredly, by each act of expiration, are slowly and silently contributing to the destruction of the ill-fated victim in the cage. But the products of respiration, poisonous although they be, are the result of vital phenomena, and, therefore, cannot be dispensed with nor prevented; but the grand source of vitiation to which I am desirous to direct attention, is both removable and preventable, because it is dependent on the ammoniacal gas which is disengaged from the decomposing urine that is absorbed by the porous floors of stables. Now let me shortly describe the condition of stable-floors as these are usually (I may say invariably) constructed—and suppose we take a stall in the Piershill barracks as our text: nothing could be more unscientific than the arrangements which are here everywhere to be observed. All that seems to have been aimed at is merely to secure a hard and resisting footing for the animals, and that this may be effected at the cheapest rate, the following mode of procedure is practised:—Boulders, or irregular blocks of stone, are placed in a bed of sand, or small gravel, (I beg especial attention to this circumstance,) and it is believed that when these are made to present a fair surface, that the "job" has been creditably executed; but what are the facts? They are simply these: When the liquid manure of horses is dropped on such a floor as that which I have described, they rapidly percolate between the interstices of the irregular stones—decomposition immediately ensues, and deleterious gases are abundantly disengaged. I would, therefore, beg to press upon the attention of all whom it may concern, that the principle of rendering stable-floors impervious to moisture should never be lost sight of; without attention to this desideratum the most ingenious schemes for ventilation must be stultified! So rapidly do the component parts of urine assume the gaseous form, that it has surprised many to find, on examining an imperfect floor, that percolation has extended to so small a depth, but the true explanation of this circumstance no doubt is, that the recently-dropped urine comes in contact with materials in a high state of chemical action, which, like yeast to the wort, immediately induces a similar condition in the atoms of the recent materials, ammoniacal gas is formed, which ascends and pervades the entire apartment. The irritating ammoniacal gas I have frequently found, on going into a stable in the morning so concentrated that I could not breathe without coughing, and my eyes lachrymated as if a newly-cut onion had been hanging under my nose. Now, the products of respiration contributed but in an inferior degree to this state of vitiation. I repeat again, that it is impossible to preserve the purity of the atmosphere of a stable, while its floor continues pervious to moisture. I, therefore, cannot too strongly urge this fact upon the attention of every one who may find his stables in an objectionable and unwholesome condition; and it will be satisfactory to know that the means by which the desired improvement may be effected, involves neither difficulty nor expense.

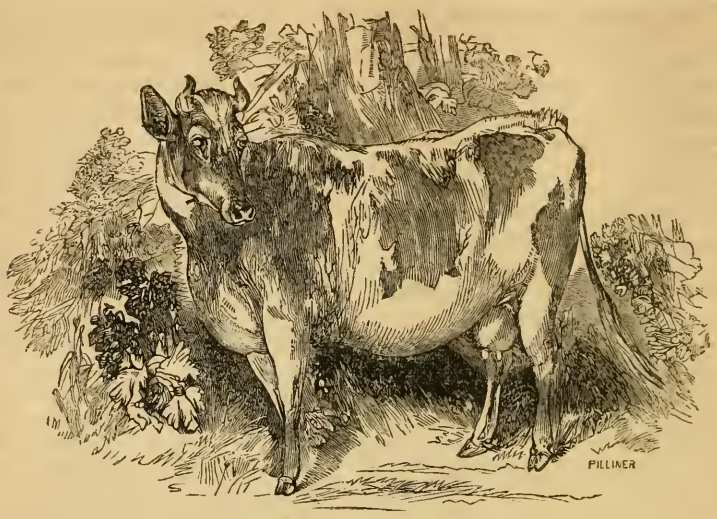
Let the centre of the causeway'ed stall be removed 2 feet in breadth, and 5 feet in length, measuring from the croup end of the stall. Flags of sandstone pavement, of 1 foot in breadth, 3 inches thick, and of convenient length, having the inner or central edges beveled to such an angle as that when the two are brought together there will be a space or central gutter formed like an inverted V, 1½ inch in breadth at the surface, and 2 inches deep at the apex of the inverted cone, which space must be filled with cement or pitch—a slight downward and backward inclination must be given to the paving-stones, so that whatever liquid may be dropped upon them, shall be rapidly conducted towards the hind quarters, and thence conveyed on the surface to the point in the exterior found most convenient for a tank, or reservoir, where it may be stored till required as manure. I find the making such an arrangement as I have shortly described would cost for materials about 10*s.* per stall—10 feet for each stall, and 10 feet for that part of the floor immediately behind the animal opposite his stall. A most superior article I know could be furnished by Messrs. J. Paton and Sons, of Ayr. The excellent quality of their sandstone, and the great advantages of their ingenious and powerful stone-cutting machinery gives to their establishment a peculiar claim to preferment.

I shall conclude this perhaps already too extended communication, by assuring gentlemen who may adopt such structural arrangements as I have proposed, that they will have no reason to regret their conduct; as to the pecuniary outlay which these improvements would require, you'll

> "Let me whisper in their lug,
> That's ablins nae vexation;"

because all that is to be done is to give their noble animals (whose faithful servitude deserve so well at their hands) credit for one year, as the following statement will clearly demonstrate.—A horse voids more than 3 lbs. of urine daily—or say—1100 lbs. per annum=21 lbs. ammonia =180 lbs. guano, 10*s.* So that he pays like a gentleman for the enjoyment of an unvitiated atmosphere.

In a future communication I will endeavor to give a popular description of the theory of ventilation, and the contrivances by which fresh air may be supplied to stables, and modes by which it should be removed when it becomes vitiated from natural causes. The necessity there is for rendering stable-floors impervious to urine appears to me so obvious, that I flatter myself no sensible man who may chance to cast his eye over this hurried and imperfect paper will hesitate for a moment in adopting some plan, which shall have the effect of rendering his stable-floors impermeable to liquids. Until this is effected, it is idle to talk about any ventilating scheme whatever; therefore, I say—Reform your Stable-Floors!!! W. D. Guthrie.



INTERESTING IMPORTATIONS OF CATTLE OF VARIOUS BREEDS.

It gives us pleasure to note some of the measures in progress for the further importation of celebrated races of foreign cattle. The importation for Mr. Colt, of an Alderney, or rather a Jersey Island cow, of which we here give a characteristic presentment, selected by Col. Le Couteur himself, and procured under every circumstance to insure purity and excellence, has already been mentioned. We are authorized to confirm the statement from memory, that she cost $160, to which may be added freight $50, as the expense of importing.

Mr. Colt had purchased a six months' calf, of the same breed, at Mr. Physic's sale, at Germantown, Pa. Thus, from the stock imported by the late N. Biddle, and those referred to, with their produce, Mr. Colt has at Paterson, eighteen cows, and heifers and calves, making probably, the largest herd of pure Jerseys now in this country.

We have not the least doubt, that the milk of his Alderney cows, measured by its richness and proportion of cream and butter, would command 8 cents a quart in New York, and the cream 50 cents. Every gentleman, keeping a cow for his own use, to have nice rich cream for his coffee or black tea, and neither is perfect without it, ought to have his Alderney, or rather his Jersey cow.

But not satisfied with his superior herd of Alderneys and Ayrshires, Mr. Colt has, we learn, procured through the kind agency of Col. Webb, our Minister to Vienna, a bull and cow of that breed of Austrian cattle, so strongly recommended by Mr. Fleichman, in the Patent Office Report for 1847.

"Agreeable," says Mr. Fleichman, "as the general impression must be, which Swiss cattle at the Marienthal Dairy makes upon the stranger, it is nothing when compared to the sight reserved here for the farmer, of the fine stock of Murzthal cows. This race combines nearly every one, if not every excellence—abundance of milk, disposition for fattening, and great strength for draught, and is raised here in its highest perfection. The full blood of this race is characterized by the small shaped head, with broad forehead and broad mouth, short and fine horns, extended body, broad back and handsome neck, high and slender tail of considerable length, fine bluish hair, big udder, and on the whole by the stately and soft entire appearance."

This description corresponds very much with a large mouse-coloured cow of splendid form, a great milker, owned by the late Henry Thompson, at Clifton. We are sure she will be well remembered, by all surviving amateurs of fine cattle and other good things, who remember the delightful re-unions we used to hold there of a warm summer's afternoon, in the hospitable shade of his piazza and hall, and in view of his beautiful grounds.

This importation of Hungarian cattle, will constitute an epoch in our history of dairy husbandry, and we trust the stock will be found to equal the description and to unite all the excellencies designated by Mr. Fleichman. How much more do those deserve to be gratefully remembered and honored who import a new race of valuable animals, or labour-saving agricultural implements, than those who import new fashions in dress, or new implements of war! But are they so?

This race of cattle is that characterized by an English author of deserved celebrity.

"This breed affords the best milch cows; they are chiefly bred in the Island (Alderney) from which they derive their name, and in the neighbouring Islands of Guernsey and Jersey. They are small sized; in colour light red or dun, mottled with white; horns short and generally curled, or what some call crumpled horn; bones fine. As fattening cattle, they have but few good points, being thin and hollow in the neck, sharp and narrow on the back, light in the brisket, and lean on the chine, with short rump and thin thighs, but their flesh is fine-grained, high-coloured, and of excellent flavour. They are also very large in the belly; but this, as well as some of the points already mentioned, is rather an advantage to milch cows. Their udder is well formed.

"Their neatness of appearance, and being exceedingly good milkers, has contributed to place them high in the estimation of most dairy men; although their shape is defective, they are generally crossed in this country (England), which accounts for the breed being but rarely met with pure. It has been supposed by some that they will thrive on any poor pasturage with the assistance of hay in winter. They certainly, like all other light stock, do not require the same support as larger animals; still, when their milk is not equal to its general quality, it is owing to the pasturage not being so rich as in their native country; which, probably, is the cause of their being thought very tender and requiring good nursing in winter."

It was from importations from the island of *Alderney*, chiefly, that this breed obtained celebrity in England for the extraordinary richness of their milk—but more recently, probably under the fostering and auspicious influence of a united Agricultural Society, of which Col Le Couteur is a leading, if not the presiding member, the breed is established in its greatest perfection in the island of Jersey. Yet it is quite probable that from whichever of these islands derived, this race of cattle will continue to pass under their original denomination of Alderney cattle. Mr. Colt was right, however, in going at once, not only to the island of Jersey, but to the fountain-head of intelligence and good faith in such matters, to Col. Le Couteur himself, and was fortunate in enlisting his careful attention in the manner we have mentioned, through his friend, General Devereux, whose heart inclines him to the amiable and patriotic, as constantly as the needle points to the pole.

The late Henry Colman, who had observed carefully and written much on the quality and produce of milch cows, in his European Agriculture says—"of all the cows which I ever saw, the handsomest—that which gave the best promise of being what a cow should be—was an Alderney, or rather improved Guernsey cow, brought from one of the channel islands, and shown at the meeting of the Royal Agricultural Society at Southampton. She was rising two years old, of moderate size, compact and well-shaped, of that yellowish dun colour which generally characterizes the breed, with a large and golden udder, ears of an orange colour in the inside, a clean and thin neck, and the bright eye of a gazelle. They are valued mostly for their milking properties, and not so much, in that respect for the quantity as for the *extraordinarily*

rich and creamy quality of their milk, in which certainly they surpass all other breeds. It is said that no animals will thrive faster when well fed, and not on milk; and their size is not always inferior. I found at Walbeck, the residence of the Duke of Portland, a herd of Alderney cows, of the size of ordinary cows, and in good condition. Few gentlemen or noblemen in England, resident in the country, are without one or more Alderney cows for the supply of their tables with cream and butter, and I never have had the slightest difficulty in instantly recognizing their produce—they are kept in some proportion, at some of the large farm dairies in England for the purpose, by mixing their milk with that of other cows of a different breed, of giving colour to the butter, and richness to the cheese; but I was informed at one of the best dairies in Gloucestershire, where forty cows are kept, that a dairy exclusively of Alderney cows "would not make good cheese, or rather would make it too rich," and that beyond a certain proportion, and that not a large one, it was not advisable to mix their milk with that of other cows. So difficult, however, is it to determine anything, that I have found other farmers to state that they have succeeded perfectly in making excellent cheese from the milk of the Jersey cows.

The improvement which has taken place in this breed in the island of Jersey, a specimen of which I have given an account of above, is most remarkable; and in their improved condition, for certain purposes, especially for the luxury of cream and butter, it would, I think, be impossible to find a more valuable breed. It is objected to their beef, that the fat of it is too deeply yellow, but otherwise it is deemed excellent in quality. Mr. Colman gives an account of two oxen of this breed fatted by Sir Charles Morgan, which weighed alive, the one, one thousand six hundred and ninety pounds, the other, one thousand six hundred and fifty."

But here are

MORE IMPORTATIONS OF THE CELEBRATED BATES' STOCK OF SHORT HORNS.

Some months since we were apprised of the intention of Mr. Morris, a wealthy and spirited farmer, of Fordham, West Chester county, New York, to embark for Europe, on an agricultural tour, and especially to examine for himself, the agriculture and the domestic animals of England. We rejoiced to learn it, because we had no doubt that his choice of such as he might select, would be guided by the desire to send home the best, without stint; and that, as we took the liberty to advise him, he would take measures, by successive supplies of the best to be picked from the best herds in England, to keep up the excellence of such as he might now procure.

The more certainly to make sure of seeing collected in one herd, many of the best short horns to be found in all England, Mr. Morris so timed his visit as to be present at the sale of the Kirkleavington herd of short-horned cattle, of which he gives the following account:—

KIRKLEAVINGTON, YORKSHIRE, *May 10th*, 1850.

To J. S. SKINNER, ESQ.,

Editor of the Plough, the Loom, and the Anvil.

MY DEAR SIR—The great Bates sale took place yesterday. It was a sight which England never has, nor never will see again, as to the extent and quality of the herd. The attendance was from three to five thousand, from almost all parts of the world. The average price was about 63 guineas, $315, the highest 205, $1010, and the lowest price for any animal that was sound was 30 guineas, $150. Mr. Collings' sale reached higher prices, I believe, but it was when the country was in a more prosperous state than it now is, and the terms of sale must have been more liberal than these were. The heirs and executors of Mr. Bates' estate are in chancery, and all business done through a receiver, who made the terms half cash down, and balance on delivery of the animals, which was to take place five or six days at the farthest from the day of sale. The risk of the animals, immediately on being struck down, was to be borne by the purchaser.

I purchased three head; and a Mr. N. J. Becar, from Smith Town, Long Island, whom

I met on board of the steamer, by my information and influence, purchased four head. I did not make my purchases until I had examined all the herds of any note in the counties of Yorkshire and Durham, which is the finest short-horned section in the world; and even then I had several *re-examinations* through Mr. Bates' herd before I made my final selection, and the only animals I bid on I purchased. If I can get a complete list of the sale before mailing this, I will enclose it to you, but I am fearful that even this letter will not be in time for the steamer of to-morrow. As I am pressed for time, I shall not be able to write more fully at present. By the next steamer I hope to be able to give you some account of the agricultural aspect of the country, *as it strikes me.*

I remain yours, respectfully,

L. G. MORRIS.

P. S.—Tuesday, 14. The above not being in time, I send you to-day the list of sale.

SALE OF THE KIRKLEAVINGTON HERD OF SHORT-HORN CATTLE.

The sale of this celebrated herd of that variety of the ox, which is justly the pride of Britain, and especially of our district whence it was originated, was held on Thursday last, by Mr. H. Strafford, of London, the editor of "The Short-horn Herd Book," in the presence of a company of upwards of 5000 persons, which included nearly every breeder of note of this variety of cattle in the United Kingdom; and, also, breeders from Belgium, and other parts of Europe, and from the United States of America. The stock brought forward, on this occasion, consisted of 48 cows, heifers, and heifer calves, and of 20 bulls and bull calves, the property of the late Thomas Bates, Esq., formerly of Halton Castle and Ridley Hall, Northumberland. To enter into the details which the importance of this auction justly merits, is, we regret, beyond our limits, at so late a period previous to our publication. The space we can possibly spare in our columns at present will, therefore, extend only to a summary of the prices for which the stock was sold, and the names of those purchasers of the lots which, from their extraordinary excellence, demand special notice; and, in doing so, we trust that the paucity of detail may not be construed into any indifference on our part in regard to the other lots in the catalogue, as we must, after the most minute inspection of every animal in this extensive herd, declare that there was not an animal which could be characterized as being either *inferior*, or even *mediocre.* The auctioneer, with great propriety, introduced the business of the sale by reading an extract from a memoir of Mr. Bates, which appeared in the *Farmer's Magazine* of January last, tracing the career of that gentleman as a breeder of short-horned cattle, and on an inspection of the stock submitted on this occasion to the criticism of the whole short-horn breeders of the day, our expectations, from the perusal of the article referred to, were in nowise disappointed in the quantity of the animals: and the result of the sale, which we give below, fully corroborates our opinion that any of the points of high pedigree, size, quality, and symmetry, has been very rarely attained. In these qualities combined, we may fearlessly assert, that the Kirkleavington cattle at Mr. Bates's death were unequalled by any herd in existence, The sale commenced with the cows, heifers, and heifer calves, and the first 20 lots in the catalogue were cows which sold at various prices, from 20 to 125 guineas, for 1034*l.* 5s., or an average of upwards of 51*l.* 14s. each, in which class the Marquis of Exeter was a purchaser of lots 1 and 6, Wild Eyes 8th, roan, calved Feb. 16, 1842, Oxford 2d, roan, calved April 20, 1839, got by Short Tail (2628), at 52 and 40 guineas respectively; the Earl of Ducie, who attended the sale in person, of lot 11, Duchess 55th, red, calved Oct. 31, 1844, got by Fourth Duke of Northumberland (3649), for 105 guineas; and lot 20, Oxford 6th, red, calved Nov. 6, 1846, got by Second Duke of Northumberland (3646), for 125 guineas; *Mr. Morris, of the United States of America, lot* 13, *Oxford 5th, roan, calved Nov.* 24, 1844, *for* 71 *guineas;* Mr. Jonas Webb, of Babraham, Cambridgeshire, of lot 14, Wild Eyes 14th, red and white, calved Jan. 24, 1845, for 29 guineas. The next lots in the catalogue were nine three-year-old heifers, which realized 802*l.* 14s., or an average of upwards of 89*l.* 2s. each, of which Mr. Champion was the buyer of lot 23, Wild Eyes 22d, roan, calved July 26, 1847, for 100 guineas; Mr. Anthony Maynard of lot 24, Wild Eyes 23d, roan, calved September 3, 1847, at 100 guineas, lot 26, Waterloo 10th, red, calved October 27, 1847, at 60 guineas; Earl Ducie, lot 27, Duchess 59th, roan, calved November 21, 1847, at 200 guineas. The following nine lots were two-year-old heifers, which sold for 547*l.* 2s., or at the rate on an average of upwards of 60*l.* 15s. each, of which lot 31, Duchess 61st, red roan, calved August 15, 1848, was purchased by Lord Feversham, for 100 guineas: Mr. Champion, lot 32, Duchess 62d, red and white, calved Oct. 10, 1848, at 120 guineas: Mr. Harvey Combe, lot 35, Cambridge Rose 6th, roan, calved December 11, 1848, at 70 guineas: and *Mr. Morris, of the United States, lot* 36, *Oxford 10th, red and white, calved Dec.* 30, 1848, *at* 51 *guineas.* The heifer calves under one year old were ten in number, and sold for 562*l.* 11s., or at an average of upwards of 66*l.* 5s. each, in which class Lord Feversham purchased lot 39, Wild Eyes 29th, light roan, calved August 3, 1849, at 38 guineas, and lot

43, Oxford 12th, light roan, calved August 27, 1849, at 81 guineas; Mr. Hay, of Shethin, near Aberdeen, lot 40, Waterloo 13th, roan, calved August 8, 1848, at 71 guineas: Earl Ducie, lot 41, Duchess 64th, red, calved August 10, 1849, at 155 guineas; and lot 42, Oxford 11th, dark roan, calved August 25, 1849, at 125 guineas; and *Mr. Becar, of the United States, lot* 46, *Oxford 13th roan, calved Jan.* 7, 1850, *at* 63 *guineas.* Fifteen bulls were sold for 1299*l.* 7s., or at an average of 80*l.* 12s. 6d. each, of which Earl Howe purchased lot 1, Second Duke of Oxford (9046), for 105 guineas; Mr. A. Maynard, lot 2, Duke of Richmond (7996), for 120 guineas; the Duke of Sutherland, lot 6, Euclid (9097), for 40 guineas; the Earl of Ducie, lot 8, Fourth Duke of York (10,167) for 200 guineas: *Mr. Hay, lot* 11, *Grand Duke* (10,284) *for* 205 *guineas:* Lord Feversham, lot 15, Ebor (16,184), for 90 guineas. The sale of Mr. Bates's herd concluded with five bull calves, which realized 201*l.* 12s.. or an average of upwards of 40*l.* 6s., from which the Earl of Burlington became the owner of lot 16, at 155 guineas; and the Earl of Carlisle lot 17, at 50 guineas. The total amount for which Mr. Bates's cattle, 68 head, sold was 4558*l.* 1s., averaging 67*l.* 7s. each, which, when we consider the *crushing influence of Free-trade*, is indisputable evidence of the great estimation in which the Kirkleavington herd was held. Immediately after the disposal of Mr. Bates's herd, a portion of the stock of Messrs. J. R. and T. Bell, of Kirkleavington, was submitted to competition, without reserve. The last-mentioned herd were almost identical with that of Mr. Bates, inasmuch as the origin, as regards cows, was from the herd of that gentleman, and besides which the stock had access to the Kirkleavington bulls. In point of usefulness, they could not be surpassed. The value of Messrs. Bell's breed was fully appreciated, as will appear, from amongst the purchasers being the Duke of Sutherland, Earl of Carlisle, Mr. Tanqueray, Captain Dilke, Mr. Hopper, Mr. Faviell, Messrs. Becar and Morris, from the United States of America, Mr. Towneley, and others. The entire arrangements were most ably conducted by Mr. Chrisp, who represented the owner, and by Mr. Strafford, as salesman.—*Newcastle Journal.*

Much as we are pressed for space, we have taken enough on this occasion, to let the American farmer have, once for all a fuller view of one of the largest sales of cattle that has ever occurred in England, and let him bear in mind that this took place, at a time when wheat was selling so low as "almost to bear shipment from Liverpool to New York!" and further, that every guinea is five dollars.

What surprises us is, that Mr. Morris should have purchased a bull so old. But that his owner should have kept him so long for his own use, is itself presumption of his great excellence, and accounts for an animal at that age, going up to such a figure. How we should like to have been present at such an assemblage of English cattle and English farmers, and the next morning to have been at the "breaking cover" of an English fox hunt!

WHY IMPORTED STOCK DETERIORATE IN THE UNITED STATES.

The great and infallible impediment, as we have before said, to the preservation of improved stock, in all the points they have maintained abroad, consists in various obstacles. Among these we may reckon, want of that *judgment* which is the result of much and long experience—want of *capital;* and want of *liberality.*

Experience to guide a man in his judgment of the *qualities* of beasts, requires that he should be in *the habit* of seeing, handling, and dealing in a great number of the best, for a series of years—that he should be in association with breeders and butchers, of tried knowledge and experience, with whom it has been a trade, to be learned only by much use of the hand and the eye.

Capital, too, is needed, that will enable a man, without minding the loss, to throw out instantly and turn over, not to a neighbouring breeder, but to the *butcher;* every individual displaying the smallest defect of form, or one that lies under the shadow of suspicion as to purity of blood. The breeder who aims to establish himself permanently in the confidence of the community, should make up his mind, rather to give an inferior animal to the dogs, than to sell him for any price *to a breeder*—instead of this, however, there are

those, it is too much to be feared, who having once imported or bought a pair of good animals, would go on to breed from them, in and in, forever; selling anything and everything they produce. With them, it's all fish that comes into their net—and if they can talk loud, and learnedly, and pass off an inferior beast on an ignorant and credulous purchaser, they are too ready to take advantage of that confidence which of itself should inspire a generous resolution not to betray—and thus it is, that such men, some of them very great and all knowing men, in their own conceit, pass off their worthless ware, and laugh in their sleeve at their own smartness.

Other flocks and herds again, soon deteriorate, from being stinted when too young—their owners count too closely the expense of full keep, when they are young and growing, and when generous keep is most indispensable. But we need not dwell again on the ill effects of ignorance and avarice—they sometimes, would we could say always, receive the reward they deserve.

SHEEP HUSBANDRY IN ALABAMA—WHAT IS NEEDED FOR ITS EXTENSION.

TUSCALOOSA, *April* 17, 1850.

J. S. SKINNER, ESQ.

DEAR SIR—In no part of the United States does industry require artificial stimulants more than in the South. A large proportion of the people here are unemployed, or their labour is much less profitable than it would be if the objects and pursuits of industry were more extensively diversified. The prosperity and happiness of the people require that additional inducements should be offered to enterprise.

The resources of Alabama, now unavailable, are almost incalculable. Coal, iron ore, marble and limestone of the best quality, with an abundance of water power, may be purchased at $1 25 *per acre.* But capitalists have been prevented from investing, because they are indisposed to change their accustomed and familiar business.

I became convinced long before I read the discussions of Mr. Carey and yourself, that the South was the country for manufacturing cheaply, and that the improvement of the "Machinery of Exchange," was all that was required to bring the *loom and the anvil to the plough.* Five years ago I wrote several essays with a view to awaken enterprize, and direct capital in a direction to produce such a result. The industry of the South does not, in my judgment, require protection for cotton and woollen manufactures. I am aware that you, perhaps, dissent from this proposition. Our opinions were modelled by different teachers, and in no small degree may be attributed to local associations and influences. But it is not my purpose to enter the arena of controversy. I am perfectly contented to think and let think.

In this State, public attention has been powerfully drawn to the improvement of her industrial and economical interests. The removal of obstructions in our rivers is contemplated, and the construction of plank and railroads is entered upon with a spirit which promises to achieve much. It is no longer a problem, whether cotton can be advantageously manufactured in the South. That branch of industry has established itself upon a firm basis, and its progress is still onward.*

* The following, with hundreds of proofs like it, are signs but too significant, that something further is needed to give some chance to American labour, against the degraded labour of Europe.

The Petersburg, Va., Intelligencer says that "with the exception of the Battersea, Et-

It is certainly unnecessary to argue to you, that wool can be more extensively and profitably growed at the South than the North; this is most satisfactorily shown by the admirable work of Col. Randall, the writings of Mr. Cockrill and others, with all which you are perfectly familiar. The old and hitherto conceded opinion, that a high northern latitude is indispensable to a fine, long and strong staple, has been disproved within the last few years; and it has been demonstrated that these qualities depend rather upon due attention to the improvement of the breed, the dryness of the atmosphere and the character of the food on which the sheep subsist, than all other causes combined.

This State furnishes a variety of soil, the greater part of which is yet the property of the United States, and much of it likely to remain so for the next half century, unless the price is greatly reduced, or a portion is given to us to aid internal improvements, that the remainder may find a market. In addition to other summer and winter pasturage, the lime lands of north Alabama yield blue grass and clover in great abundance; the elevated and undulating portions of the State, even as far south as the Gulf, afford water and grazing and browsing for every description of herds and flocks. Grasses, coarse, fine, tough, tender, short and long, grow in the forests—taking their character from the seasons and their localities.

It is a very common belief at the North, even among those who should be better informed, that extensive marshes are found throughout Alabama, continually exhaling malaria, pregnant with disease and death. No conclusion could be more erroneous. Few of the States covering an area of more than fifty thousand square miles, contain a smaller quantity of wet lands, and its healthfulness at all seasons will compare favourably with any of her sisters.

Sheep husbandry can be much more successfully prosecuted here than in those States where the flocks are required to be foddered or fed on roots,

tricks, Matoaca and Mechanics' Cotton Factories—all of which are at half work, and of course on half wages—all the other Petersburg Cotton Factories, (the 'Washington,' the 'Eagle,' the 'Merchants',' and the 'Canal,') have stopped operations to await the coming of better times. This step, imposed as it was by a stern necessity, must create great distress, as a large number of men, women, and children, who depend upon their wages at these establishments for their daily bread, have been thrown out of employment, and with no prospect of getting other employment by which to earn a living.

"Effects of the Free Trade Policy.—The free trade policy, with its *ad valorem* system of duties, is working out its ill effects in other States as well as our own. The iron interests of Northern New York, as in Pennsylvania and Maryland and Virginia, are forced to succumb to the ruinous competition of British iron-masters and the low priced labor of foreign countries. The *Clinton Whig*, published in Clinton county, N. Y., states that of forty-one forge fires on the Saranac river, in 1848, twenty-one had been put out previous to the first of January last, and since that time, fourteen of the remaining twenty have also been extinguished—leaving but six of the forty in operation! The Whig adds:

"By this necessary suspension of business, *more than five hundred men have been thrown out of work*, and over 2000 women and children, dependent upon them for bread, are deprived of the comforts which they have heretofore enjoyed! In addition to these, eight of the eighteen fires on the Salmon river have been put out, and others will follow. So on the Ausable. Of the fifty-four there, probably not a dozen will be kept up through the summer.

"At these three points alone, over 1500 men, heretofore earning from $1 to $2 per day, will be thrown out of work—and the $2000 a-day which they have been earning will go, practically, into the pockets of the iron-workers of Great Britain."

In a letter from Messrs. Kennedy, Childs & Co., of Pittsburgh, on subscribing for this journal, they say:

Penn Cotton Mill, Pittsburgh, *May* 24, 1850.

"It may not be altogether out of place to state here, that owing to the working of the *beautiful* tariff of 1846, we are preparing to close our works, by which some three hundred operatives will be deprived of employment."—*Ed. P. L. and A.*

during at least half the year. In a great part of this State they may subsist and do well running at large in the forests, or on the gleanings of fields or pastures, with shelters under which they may at pleasure repose at night, or in inclement weather, with occasionally a little hay, cotton seed, corn or peas —taking care to furnish pastures of rye or other green food, during the period when the ewes are dropping their lambs. In fact, in almost all South Alabama, winter grass grows with sufficient luxuriance for the grazing of sheep, to say nothing of the most of our extensive pine forests on which sheep feed and fatten.

Notwithstanding the advantages of the South for growing wool, but little attention has been given to its production, *because it is not manufactured here to any extent, and consequently we have no home market for it.* Some of our cotton factories card it upon shares, or charge eight or ten cents a pound. Instead of submitting to such a heavy contribution, those who grow it beyond the immediate wants of their families, would prefer selling good wool at twenty cents per pound; but they complain that there is no demand for the article.

Alabama can produce as fine sheep as can be found anywhere, and would grow for the market several millions of pounds of wool, annually, without diminishing her other products, if she could obtain a remunerating price in Mobile or her interior towns. The want of such a market really paralyzes an important branch of industry. Judging from the progress of the last half dozen years, it is fair to suppose that the period cannot be remote, when we shall be manufacturers, not only of cotton, but also of wool;* but even then the supply may be increased far beyond the home demand.

The object of this communication is to invite your co-operation in establishing a "Wool Depot" in Mobile, at which the article may be sold for cash, at prices bearing a just proportion to what is paid for the same qualities at the North. In advancing this enterprise you may enjoy the consolation of being a public benefactor—not only by adding to the exports of Alabama several hundred thousand dollars in less than ten years, but in arousing many poor persons to industry by furnishing a market for a staple, which can be produced in abundance with a small amount of capital and effort. Is not the field sufficiently inviting to induce capitalists to enter it? Will you not lend your assistance? Benevolence is a moral duty. The North is largely indebted to the South for having so greatly enriched her, and still contributing to her wealth. That debt has been poorly requited. We however ask nothing in charity, or as a mere gratuitous favour.

If a market for wool were opened in Mobile, the interest of the grower and Northern manufacturer might be alike promoted. The latter would buy on favourable terms, and commend himself as a seller of goods to the people of this State.

I will endeavour to collect some specimens of wool from our native and improved breeds, and forward them to the Hon. P. A. Browne for examination. I hope to send you very soon, a publication more interesting and instructive than anything you have yet seen upon the geology and mineralogy of Alabama. In the meantime I remain, with great respect, your most obedient servant, H. W. C * * * *.

* It was our strong persuasion of this fact, that prompted us to apply to Col. Randall to illustrate and prove it in a work, which leaves for the Southern landholder who desires to extend his flocks, nothing further to be wished for, in the way of information, except to find out how to place the owners of *sheep* on a level with the owners of *dogs*, in point of influence with demagogue lawgivers, whose love of popularity transcends, somewhat their understanding and love of the public interest.—*Ed. P. L. and A.*

ON THE PROPER DEPTH TO SOW WHEAT—THE AVERAGE PRODUCT PER ACRE AND COST PER BUSHEL—THE OPINION OF AGRICULTURAL MEN AND SOCIETIES SOLICITED.

What points in husbandry can be more worthy of consideration? May it not be believed that the rotting of Indian corn seed, so much lamented last spring, resulted from deep and irregular planting? That there is a rule to be observed, and that that may much depend on the season, there can be no doubt. If the season be dry and warm, no question but the grain would bear to be planted deeper, and would yet vegetate and grow. It is, we apprehend, this which constitutes one of the great advantages of *drill*, over *broad-cast* husbandry. The former gives to the husbandman more certain control and greater exactness and uniformity in the depth at which the seed is deposited. This is one of the subjects which does not vary in its aspect with the lapse of time. The principles on which it depends, are durable and permanent; and what was applicable to the subject, when we published the following essay, thirty years ago, is no less applicable now. If correct, it admonishes the farmer to put his ground for wheat in the most perfect tilth, and to take such measures, either by drilling or light harrowing, as will ensure shallowness and uniformity in sowing. If any of our readers have anything to say to the contrary, founded on experience, we shall be glad to hear from them; for, after all, the young farmer, of proper ambition, will think for himself, and be ever anxious, by the exercise of his own reason, and the test of experiment, to pronounce with confidence between the plausible and the true. While we are on this subject, we may express the hope of being informed of the result of further trials, if any have been made, of sowing wheat in the standing corn, as practised by some in Delaware, at the last working of that crop—and we suggest to farmers to make trial with sowing clover, whether with wheat or not, on their corn land, on laying by that crop. We cannot but think it a slovenly and expensive practice, however, to sow wheat while the Indian corn is still standing in the field; but we are not so sure that the clover may not be sowed then and there to advantage. The shadow of the corn may protect it and the root it would take would give it a good start in the spring, and secure it against being winter killed.

Finally, it is impossible for an observant and anxious friend of agriculture to contemplate without regret the course and the result of wheat husbandry in the States, where wheat constitutes the staple crop. Let us again repeat the request that judicious farmers in Delaware, Maryland, and Virginia, will take the trouble, not for our sake, but for their own, to calculate the *cost of manufacturing a bushel of wheat*, as it is manufactured or grown (the same thing) one year with another on his own farm.

We verily believe that neither Maryland nor Virginia *average* ten bushels —perhaps not more than eight to the acre. Now, the question is, whether those who continue to make it at that rate are not on the road to the ruin of their lands and themselves? for, John Taylor, of Caroline, Virginia, always insisted that less than ten bushels would not pay, and we do not suppose there is a farmer in England that would attempt to grow it under the expectation of less than fifteen, considering it a ruinous business at that, though he can hire his labour at six or seven dollars a month, the labourer finding himself. Again we say, let us have at least an attempt at calculating the cost, in various localities. Let it be the subject of discussion at agricultural clubs, and let the discussion wind up thus: Resolved, as the opinion of the Agricultural Society of Talbot, or of the Dorchester County Society, that, as a general average, the product of wheat in this county is bushels per acre,

and the cost per bushel. There is no obligation in such case to be exact or certain to a cent; but let us have the conjecture of judicious men for what it is worth. Who would put confidence in the sagacity or solidity of the merchant or the manufacturer, that was known not to attempt to ascertain the exact cost of a yard of cloth or a pound of sugar—yet does not the same obligation rest upon the farmer?

"The Hessian Fly proving extremely destructive to the crops of wheat in Virginia last spring and summer, and much having been written in the public papers on that subject, without adding one solitary useful fact to our knowledge respecting them, except the one communicated by General Cocke, respecting the manner in which they deposit their eggs on the blades, and descend into the sheaths of the wheat; a fact for which we ought to be much obliged to him, and hope he will proceed in tracing their natural history, by a careful and minute attention to their progress through their different stages; till that is done, I am inclined to believe that we shall not receive any really useful knowledge respecting the best means of counteracting or destroying their pernicious effects, though aided by the most splendid hypothetical speculations that human genius can invent. After having minutely traced their natural history, the next object that presents itself is, to ascertain the nature and manner of the growth of the vegetable of which we propose to counteract or prevent their injurious effects, viz., wheat. This becomes the more necessary, as there have been plans proposed of more injurious consequences, as I believe, than the fly itself; particularly one published some time ago in the *Richmond Enquirer*, by a person signing himself 'A King William Farmer,' who recommends early and deep sowing—a remedy which I have often seen totally destructive of the crop, the seed having rotted in the ground.

"In order to elucidate the manner of the growing of wheat from the grain, till it branches considerably, I have enclosed a delineation with its explanation, on which it is necessary to make some remarks, viz.: If a grain of wheat is placed six inches beneath the surface, it will vegetate and throw out two leaves, which are generally called seminal leaves, and corresponding roots, (see the delineation, A, *cc*, and *dd*.) then a thread is thrown out, which, as soon as it reaches near enough to the surface so as to come in contact with atmospherie air, it there forms a knob or enlarged point, which is the part from whence a new set of branches and roots are thrown out, which, in the autumn, is about an inch and a half or two inches beneath the surface, (as in the delineation marked D.) After this period, the seminal leaves, root, and the thread, denominated caudex, dies and becomes useless to the plant; above which it has a new set of roots, branches, &c. On examining many roots of wheat, some had a knob between the seminal and coronal roots, &c., appearing to be an effort of nature which proved abortive, being not near enough the surface to obtain air. If the seed is placed anywhere between six inches and two from the surface, there will be a set of coronal and seminal roots and branches; but if the seed be placed anywhere between the surface and two inches below, there will be only one set of roots and branches, and those immediately progressing in their different directions from the seed. I have said the stem or thread arises from the seminal roots to within two inches of the surface in the autumn; but this depends on the dryness and porosity of the soil at the time of vegetating; for, after the soil has settled by rains, and according to the tenacity and specific gravity of the soil, also its moisture, which increases the specific gravity, and prevents the access of atmospheric air, so will it be found nearer the surface; so that in the spring of the year, if any branching takes place at a late period, it will be found to be entirely on the surface.

"From the above statement of facts, I draw this inference: that if a grain of wheat is deposited upwards of two inches below the surface, that it has an extraordinary effort of nature to make, to come up to that point beneath the surface where it has access to atmospheric air; and is proportionately great according to the depth, quality of the soil, moisture, &c., which must occupy a proportionable length of time, and consequently is equal to having been sown so much later, if put its proper depth; and this I take to be the secret of the *King William Farmer's* deep and early seeding, as he particularly mentions a mother root, which I take to be the seminal root, (as at A in the delineation,) which is an evidence of the grain being deposited deeper than nature intended it should, for it is not to be found in wheat unless deposited upwards of two inches beneath the surface. He having mentioned the mother root, ought to have told us somewhat about where the daughters were to be found: for it is upon them that the *Hessian fly* commits its ravages, and I fancy they will always be found less than within two inches of the surface, the depth which he admits the fly to penetrate. He admits also, that all the seminal leaves were dead, a pretty good proof that the roots were so also.

"The next inference I make is, that the branching of wheat being within that distance,

to which the *Hessian fly* is known to penetrate, and that its branches become shallower and shallower according to the lateness of its branching, that deep seeding is no preventative against the ravages of the fly.

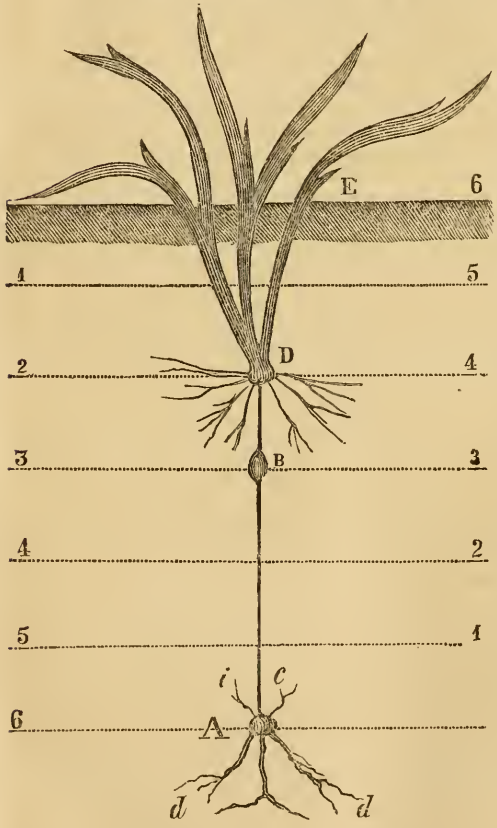
"The last inference, and not the least, is that where the seed deposited is deep, and out of the influence of atmospheric air, that should the season be moist or wet at the time of seeding, the specific gravity of the soil being increased, and its pores closed with moisture before the vegetation has reached the branching point, the seed will rot in the ground, and either partially or totally destroy, or rather prevent a crop being made. This happened to several of my friends this last fall, and is a circumstance that I have seen often happen, notwithstanding the strong disposition farmers have discovered of late years for deep seeding. To conclude, from a consideration of the above facts, and thirty years' experience, I am of opinion, that the best depth for seeding wheat is, from one to two inches.

"Thus, I have endeavoured to communicate my ideas respecting the growth and depth of seeding the wheat crop, and as connected with the *Hessian fly;* should it prove acceptable to the Society, I shall be amply rewarded for the trouble I have taken—and with my best wishes for the welfare of their undertaking,

"I subscribe myself their friend,

"WILLIAM MERIWETHER."

A delineation of the growth of wheat from the grain till it branches.



A. The grain of wheat deposited six inches beneath the surface of the earth, where it sprouts and throws out roots and two leaves which are called its seminal leaves and roots, and a central thread denominated caudex.

B. A bulb formed on the caudex, being an effort of nature to form branches and roots at that place: but being too far out of the influence of the air, goes on to within two inches of the surface.

D. The coronal roots and branches, formed two inches below the surface, having now reached within the influence of atmospheric air.

c c. The two seminal or first leaves, dead when the wheat has branched on the surface, and are hardly discernible without the aid of a magnifying lens.

d d. The seminal roots also dead after the coronal roots appear, and then are no longer useful to the plant.

E. The surface of the ground.

1, 2, 3, 4, 5, 6. Dotted lines, marking the number of inches beneath the surface at E.

Let what may be said or thought to the contrary, the most skillful, exact, and finished cultivation of land in this country, is in the large cotton fields of the South; because it is there that large forces operate with military precision under the constant supervision and direction of a single mind, clothed with

adequate authority to carry out what it dictates; and there, experience has taught them to have the seed deposited with great uniformity at from an inch to an inch and a half below the surface.

A WARNING TO THE SOUTH—FOREWARNED FOREARMED.

We commend to our Southern and Western readers the perusal of the following excellent artiele, which we take from the columns of the *Rochester Democrat*, desiring that they may see and understand for themselves how universal is the discord of the policy which goes by the name of free trade, but which has for its object the maintenance of the monopoly of machinery by England. The *Evening Post* teaches this free trade, but it cautions its Northern and Eastern readers against obtaining adequate protection, because that system will lead the people of the South to manufacture *for themselves*, while cautioning the South against such protection because it will *make them tributary to the North*. Had the planting States retained for themselves that protection which was secured to them by the tariff of 1828, they would now be the great exporters of the coarser kinds of cotton yarn and cloth, and their Northern brothers would require for the manufacture of finer goods more cotton than they now do for that of coarser ones, the consumption within the Union would be almost a million and a half of bales, and the price with a crop of three millions would be higher than it is now with one of two millions, and the lands of the South would be worth three dollars where now they are worth but one.

MANUFACTURERS AT THE NORTH AND SOUTH.

The N. Y. Evening Post, discoursing of the suspension of some of the Eastern cotton mills, anticipates as a consequence, a renewed call for the revision of the tariff and higher duties. It expresses the conviction, that the Eastern manufacturers would not even find a temporary relief from them. It adds—"they (higher duties) would encourage the manufacturing enterprise which is now running rapidly in a southern direction, and setting up mills all over the Southern States on the declivities of the upper country, full of numerous streams and close to the cotton plantations. We pointed out this effect of high duties a good while since, and *warned* the mill owners of the North to prepare for the migration of manufacturing enterprise to a lower latitude. The most effectual method *to postpone it* would have been for the mill owners to unite with the consumers in demanding a further reduction of duties."

The Post is unquestionably right. The effectual method to postpone the manufacture of cotton in the fields where it grows, is to reduce the duties. It is most earnestly to be desired that this truth may be fully apprehended at the South as well as the North, and that the former may take to heart the *warning* to which, as the Post intimates, the latter have proved so heedless.

Nothing exhibits more thoroughly the intense misconception under which the advocates of what they choose to miscall free trade, labor, than this brief slip from the Post. It is stated to the Northern manufacturers in the way of warning and in the expectation that it might deter them from advocating the continuance of the protective policy, in respect to cotton goods, that its first benefits would accrue not to them, but to the people of the South. It is obviously anticipated that the mill owners and operatives of the Eastern States, when convinced that its prophesies were correct, would at once alter their course—that the system of economical philosophy upon which they acted was one of undisguised, absorbing selfishness, that looked, first and last, to keep the industry of others as unproductive as possible, and monopolizing for themselves every field of remunerative labor.

The Post, perhaps, would have it understood that the mill owners did not believe their report, and very evidently cannot conceive it to be otherwise than that its fulfilment must prove most annoying and painful. But who is it that has heralded most promptly and rejoicingly the erection of each new cotton mill in the slave States?—who has encouraged the planters to persevere in their establishment?—who has depicted most glowingly the multiplied benefits that this diversification of their industry confers and must confer upon the people who have the wisdom to foster it?—who is it that has

exhorted them to go on and prosper?—Nobody else than the conductors of the Whig journals which are pledged to the protective policy, and the very New England manufacturers, labourers, and capitalists, whose trade, according to the theory of the Post, these men of the South were destroying. Are they madmen then?—are they insanely generous, or are they only pursuing the dictates of an enlightened self interest and a true political philosophy—which the Post does not comprehend—but which teaches them that the interests of labour are everywhere identical, and that producers can never thrive unless consumers thrive also? They affirm that the last hypothesis is the correct one. They, at any rate, are satisfied of its soundness, and propose to adhere to it. They look upon every cotton mill in the South as producing a host of friends and allies. They believe that the richer the planters grow, the better customers they will make; and that the way for them to grow rich is to manufacture their own agricultural products. In their estimation, it is quite as absurd and ruinous for the planter to send his cotton to Manchester to be spun and to bring back the cloth, paying transportation both ways, as it would be for the farmer of western New York to send his wheat to Liverpool to be ground and import the flour. It is a most cheering fact that the South is beginning to learn the folly of being merely an agricultural region itself, and of endeavouring to compel the North to be such likewise. So far as cotton is concerned, the cotton manufacturers in both regions desire no further protection. But what they do want is protection for the iron and coal of Pennsylvania and Ohio—they want encouragement for American labour in every department except their own—they are able to produce cheaply enough, but they want customers who can afford to buy, and in order that they should have them, the latter must have employment—the more remunerating it is, the greater the amount of cotton they will consume.

MR. BROWNE'S EXAMINATIONS OF WOOL.—THEIR IMPORTANCE ACKNOWLEDGED.—Extract of a letter from Wm. F. Van Amringe, Esq., to P. A. Browne, of this city, dated Montgomery, Orange County, New York, May 20th, 1850.

"The remarks you made respecting pile are new and interesting, and I look for your work on the subject both for instruction and pleasure. I hope you will have made the investigation of at least the four prominent species of men before I shall have occasion to publish a second edition of my Natural History of Man, as they will either confirm or make it necessary to modify my views in several important respects.

"The subject of your letter to Mr. Reed in the last May number of The Plough, the Loom, and the Anvil, is of vast national importance, and is made particularly interesting, by the fact you exhibit that *we can grow wool as fine as Saxony*. The other fact you exhibit that *all things remaining the same, except climates, European sheep improve the wool staple after importation*. I regard this letter of yours, containing as it does, the detail of facts upon which your conclusions are drawn, as one of *the most valuable agricultural papers I have ever seen*. It will beget a confidence in farmers which will lead to great results. It contains no speculations, is founded upon no hypothesis, and is so plain that the most simple ploughman can comprehend it without effort. It is also an important item for joy with the patriot, that in every sense our beloved country is destined to lead the world. Your remarks that crosses of different stocks [species] of sheep should not be made, because they produce hybrids, is scarcely of less value than the facts you detail in respect to wool. I believe that I was the first person who pointed out the law that crosses of temperaments in the same species are beneficial to progeny, while crosses of even proximate species *are* always prejudicial. It affords me much pleasure to notice that you have adopted and urged it in a matter of so much practical importance and in the proper time. It is, as you say, of the first importance to get a *fair start*, and not to commence by breeding hybrids. Judging from this letter I am led to the belief that your contemplated work on sheep and wool will be of *national importance*. That you may be in every respect successful is the hope of yours sincerely."

ON THE TRUE CAUSES OF EXISTING DIFFICULTIES. FROM A FRIEND OF THE UNION IN PENNSYLVANIA, TO A FRIEND OF THE UNION IN SOUTH CAROLINA.

PHILADELPHIA, *June* 13, 1850.

DEAR SIR—You asked me what it was that the North desired, and I should have been glad to answer the question in person, but as we did not meet again, will now do so on paper; but first wish to call your attention to what it is that the people of the South desire, with a view to see how far the means adopted for obtaining it appear to have tended to promote, or to defeat, the realization of their desires. In doing this, I may present a view of Southern policy and its effects widely different from that which you have been accustomed to take; but I beg you not for that reason alone to reject it as unworthy of consideration. There is error on both sides, but it is little likely to be corrected so long as either one shall continue to look only at the "aggressions" of the other, forgetful of its own; for the direct effect of such a course is to give power to men who use it only for their own aggrandizement, careless as to the effect upon the people who thus place power in their hands. Such, unfortunately, has been the tendency of the last twenty years. We have been becoming more and more sectional in our feelings—more and more sensitive in regard to "aggressions"—and more and more disposed to commit them; and for this unhappy change there must have been some cause far more immediately operative than any mere change of moral feeling in relation to slavery. To an examination of the nature of that cause I invite your attention, believing that it can be shown to be an error of Southern policy that tends, and has tended, to defeat the accomplishment of the desires of Southern men.

They desire perfect security for their property, and they enforce a system of commercial policy that tends to render, and must, as I think, eventually render, every man in the North adverse to the further continuance of their rights of property.

They desire the suppression of abolitionism, and they insist upon a system of policy that tends to render every man an abolitionist.

They desire to maintain the balance of power that they may protect their property; and they pursue a course that tends to render every Northern man a free-soiler.

They desire to become strong that they may protect themselves; and they are seeking, even at this moment, to pursue a course that must tend to render them weaker—and so have they done for twenty years.

I am no abolitionist. I have no unkind feeling towards the South. So far am I from feeling hostility to them as owners of slaves, that I cannot but respect that *only* people under whom the negro race has increased in number—that people under whose mild government 300,000 barbarians have grown up into four millions of comparatively civilized men, while everywhere else importation has been needed for the mere maintenance of numbers; and throughout the world freedom has come with the increasing value of labour and land, resulting from increase in wealth and numbers. The slave is now passing towards freedom by the natural road, profitably to himself and his owner, and his progress can be accelerated by no measures tending to the injury of either the labourer or the owner of land. If it could be so, it would be in opposition to all the facts of history, and to all those which strike us on an examination of the existing condition of the various peoples of the earth. The true friend of the negro race is therefore bound to urge the most perfect respect for the rights of Southern men, and the most entire abstinence from interference with their institutions; and he who does otherwise is a real

enemy, however friendly may be his intentions towards the objects of his solicitude. Such is, as I conceive, the duty of every man, both as a Christian and a citizen; and such, be assured, would be the almost universal tendency among Northern men, were it not that Southern measures so frequently tend to place it in the power of honest enthusiasts, or crafty politicians, to produce disturbance. What are those measures, and how they tend to give that power to their enemies, I propose now to show.

The North seeks freedom of trade through protection against a system that was declared by Adam Smith to be "a manifest violation of the most sacred rights of mankind." The South seeks to arrive at the same point by a different road, and compels the North to take its road, *and hence it is that abolitionism grows.* Seventeen years since the South dictated the policy of the nation, and the result was universal ruin. *On the day of the passage of the compromise bill, abolitionism scarcely existed.* Ten years after it had greatly grown. How much of the change would you attribute to Southern commercial policy? Might you not safely give it *nearly all?* It seems to me that you might do so.

In vain might abolitionists have lectured had they not been seconded by a feeling resulting from the fact that in every case in which the interests of the free labour of the North had come in conflict with the real or supposed interests of the slave labour of the South, the former had been compelled to give way, leaving to the latter the entire dictation of the policy of the country, however ruinous might be its effect upon free-state interests.

Power changed hands and the policy was changed, and with the change came universal prosperity. Texas was then brought into the Union, and *by her vote* the commercial policy was changed to suit the views of the South, the result of which is that Pennsylvania alone suffers this year a loss that would not be paid by *thirty millions* of dollars, and the free States one that would not be paid by *one hundred and fifty millions.* Can you wonder, then, at the existence of the free-soil party? Can you be surprised at the growth of the abolition weed, when you cultivate it so extensively and manure it so carefully? Had you let the tariff of 1842 remain unchanged, the amount of free-soilism or abolitionism would even now be so small as to be unimportant. Having so used Texas, can you be surprised at the indisposition to permit you so to use California?

The South now insists on a slave State on the Pacific to balance free California—yet it annexed Texas by a mere majority, and then used a majority thus obtained to strike down the North. Could it have done more for the growth of free-soilism? Could its worst enemies have desired anything better? I think not.

The South limits its efforts to the acquisition of senatorial votes, as now in the case of California. The accomplishment of that object renders necessary the dispersion of a population that grows by natural increase alone, there being no emigration to that portion of the Union. The necessary consequence is, and must continue to be, that as their States become more numerous the whole mass becomes weaker and less capable of self-protection, because their population is more widely scattered. Had Virginia and South Carolina looked to increasing their strength in the House instead of the Senate, they would now be much stronger than they are with Missouri and Arkansas to back them. What would be, at this time, the influence of those two States, so highly regarded as they have at all times been, had they acted in harmony with the North, and *permitted* their population to grow as has grown that of New York and Massachusetts? Would it not be treble what it is seen to be?

The South is now *compelling* the dispersion of Northern population for the creation of new States and new senatorial votes. Half of the people who have gone to California would have remained at home had they had profitable

employment, as they would have had but for the change of policy in 1846. The miners and furnace men of Pennsylvania, and the immigrants that should be building mills and furnaces, now seek Minnesota, to enable her to come into the Union; and thus the policy that induces the South to *seek to create* for herself senatorial votes, *forces their creation* in the North. Such, certainly, appears to me to be the case, and hence the measures adopted for the purpose of strengthening the South weaken it more from day to day. Would the California question now exist had the administration of 1846 maintained the policy of 1842? Yet the former was Southern policy and the latter was the Northern one. Examine it carefully and you will find, or I am much in error, that the Northern policy is the one that has at all times been needed for strengthening the South.

The true interests of the South require that it should *invite* population instead of *expelling* it. With every such expulsion it becomes weaker. The North resists, when if it sought to weaken the South it would aid in expelling population from the older Southern States. The South desires votes in the Senate that it may protect slavery, and aid in maintaining a system of commercial policy that weakens itself while aiding the growth of abolitionism and free-soilism. The North refuses the South more votes because it feels that it suffers under Southern policy, which is weakening Southern institutions by stimulating the growth of abolition and free soil, both of them foes to the peace and harmony which the North would desire to maintain. *In this question of commercial policy lies the whole difficulty.* The North cannot be stimulated to a desire for supremacy except by measures tending to the ruin of its best interests. That stimulus is furnished by the South.

The North sees its mills and furnaces closed, and its mines abandoned, and its people flying by hundreds of thousands, while the time of Congress is so exclusively occupied by the *fugitive slave* bill and other kindred measures, that there is no chance for considering the case of *fugitive freemen.* Its people are being ruined, and its expensive works are passing one by one into the hands of the sheriff. Everywhere men are seeing the day of their ruin approaching—they are hanging by the eyelids—yet are they told that their case cannot come up for consideration until it shall have been determined whether or not the South shall have more senatorial votes to enable it to continue the desolating system under which they suffer. Can you wonder, under such circumstances, that they become free-soilers? Are you not all the time engaged in making abolitionists? I really think you are. You appear to me to have been doing so for twenty years, and the more vigorous the growth of both the more abundantly you feed them. *I beg you now carefully to note the fact that on the day of the passage of the compromise in* 1833, *abolition had scarcely an existence,* and then to answer to yourself the questions—Would it ever have grown had not the South compelled the North to adopt its policy? *Will it ever diminish if the South continues to compel an adherence to the present system?* That it will not, I feel assured. On the contrary, the hostility to slavery can scarcely fail to increase with every hour that it is maintained. The people of the North are becoming tired of periodical ruin produced by Southern control of all the operations of government.

The South insists, however, that its policy is the true one. If it were so, it would produce harmony—not discord. Prosperity produces the one, but ruin the other. Ruinous as is Southern policy to the North, it is suicidal as regards the South, and it is its own policy that produces its own weakness, and its own jealousy. Five hundred millions of dollars would be *not even an approach* to the amount of loss to the planting States from the abandonment of the policy of 1828; and I feel warranted in asserting that the

value of Southern property is not at this day *one-half* of what it would be but for the adoption of Southern policy in 1833. Northern manufacturers now fear perfect protection, because it will produce Southern competition. Northern free traders now caution the North against protection, because it must extend manufactures in the South—yet that extension is all that is needed by the South to double the value of its land. Nevertheless, it clings to them, and would regard me as almost an enemy.

For the last seventeen years the South has controlled the policy of the government, except during the four years from 1842 to 1846. Has the value of Southern property increased in that period? Is it as great in proportion to population, as it was in 1832? Had the policy of 1828 been maintained, would not the South be now studded with factories, at which there would be consumed at least half a million of bales of cotton? and would not the coal and ore beds of the South be now producing iron by hundreds of thousands of tons, to be employed in making railroads through the South, and factories in the South, creating a demand for labour, and increasing the value of both land and labour? Should we not have imported millions of people to be consumers of cotton, each one consuming here five or even ten times as much as he consumes at home? and would not the home demand now absorb so much as to enable the planters to fix the price for themselves instead of having it fixed in the fluctuating market of England? Such would have been the case; and so great would have been the effect, that in asserting that the value of property would have been double what it now is, I feel assured that I assert far less than the truth. Hundreds of thousands of men who are now at the North would have found a place in the South, but for its suicidal policy—and it is man that gives value to land—yet the South is always engaged in the expulsion of man from land.

Let it not be said that this is a question of the undivided South against the North. A very large portion of the people of the Southern States have already arrived at the conclusion that the policy of 1842 was the true one, and would this day vote for its re-establishment, could their opinions be fairly represented. Virginia is almost equally divided, yet her immense minority is almost unrepresented on the floor of Congress. Delaware, Maryland, Kentucky, and North Carolina are favourable to protection by a large majority. Tennessee, Georgia, Louisiana, and Florida are equally divided; and it may be deemed doubtful if in the whole of the States south of Mason and Dixon's line there is not a majority adverse to that which is regarded as the Southern policy; while at the North, could the vote be now taken on that question alone *without reference to party*, the vote in favour of protection would probably be two to one. Nevertheless, by force of party organization the minority rules the majority, and is then surprised that the majority struggles to prevent the adoption of measures tending to the maintenance of such a system.

Free trade, however, you will say, must be right. It is so, but how to reach it? You, perhaps, will say that Adam Smith taught that it was to be by the removal of restrictions on trade. He did, but of all restrictions those which he deemed the most disadvantageous were those English ones which tended to prevent the loom from going to the plough, as he saw it naturally tended to do. *Smith regarded the home market as the great one*, and he taught that every measure which tended to a diminution of the proportion of mechanics to agriculturists was not only a great discouragement of agriculture, but a violation of the dearest and most important of the rights of man—and as such it was that the men of 1776 resisted, and that we resist them. From the day of the publication of the "Wealth of Nations" to the present hour, *every single measure* of English policy, without an exception, has been directly in opposition to Smith, who would be, were he now a Carolina planter, an

advocate of protection as the only road to freedom of trade, for that policy is in perfect accordance with his views. He was opposed to the system which had for its object that of making England "the workshop of the world," and yet it is the sole and exclusive object of all the measures now characterized as "free trade." Were he now here, he would be no advocate for the suicidal course of the South, for it is opposed to his whole system—nor would the Southern States be so if they were alone, but they are so because they desire to weaken the North, whereas their policy weakens themselves while making enemies at the North. They are, be assured, themselves the cause of all their difficulties, for abolitionism and free-soilism owe their existence to the change of front of Mr. Calhoun and some of his friends between 1816 and 1830.

We may now go ahead with the present policy, and continue to wrangle about slavery, which will continue to grow weaker, and the hostility to it continue to grow stronger, until the worst anticipations of Southern men shall be realized, to the infinite depreciation of Southern property. Or, the South may determine to mine its own coal, smelt its own ore, and make its own cloth, in harmony with the North, the strength of the planting interest increasing until the fondest anticipations of Southern men shall be realized, to the great increase in the value of Southern property, and to the annihilation of abolitionism and free-soilism—and to accomplish all this there is needed only protection, not, as you say, prohibition. That is not required, but security to the North and the South against the perpetual revulsions of England is absolutely necessary to the security of Southern property—and *the latter cannot exist without the former*. How is it possible that it should? The one policy links the South to England, the creator of slavery in India*—the denunciator of it in America—the emancipator of slaves in the West Indies—the stimulator everywhere of competition with Southern products—the enemy, everywhere, of Southern interests—the slanderer, everywhere, of Southern men—while *crushing* Pennsylvania, always the friend of the South, and almost crushing the Northern States, *which stand by the South alone against the world*. The other links it to friendly Pennsylvania and the friendly North and West, while making it independent of the inimical Briton, who, if he had the power, would at once emancipate every slave and ruin every planter. Look, I pray you, to the proceedings in reference to Brazil and slave-grown sugar, and determine which it is that the South should conciliate. Next, look to the fact that she *clings* to the Briton and *tramples* on the Pennsylvanian; and then determine why it is that free-soil grows.

Of all the parties that have ever controlled the destinies of England, the one most opposed to Southern interests and Southern institutions is that which now seeks, by the establishment of what is termed "free-trade," to render permanent *the monopoly of machinery* by which that country has at all times sought to become "the workshop of the world;" and yet it is with that party and that policy the South desires a close alliance. As a specimen of the doctrines taught in that school, I take from one of the papers of this day the following paragraph, to which I invite your careful attention :—

"The Westminster Review, heretofore regarded as the organ of the 'Whig,' and sometimes even of the 'Progressive' or 'Radical' party in England, has lately spoken upon the subject of slavery, in a tone which ought to set all parties in the United States

* It was reserved for English domination and English taxation to produce in India such a state of exhaustion as to induce the Hindoo to sell himself for a term of years, to be employed in the cultivation of sugar in the West Indies. The latest intelligence from India brings accounts of a rebellion on account of an increase in the tax on salt, already so great that *Liebig* is disposed to attribute to the almost impossibility of procuring that necessary commodity, the steady existence of cholera.

to thinking. It says that, to prosecute to its proper end the policy which induced the abolition of slavery in the West Indies, the British nation must extinguish slavery in the American States, Brazil and the Spanish West Indies. It adds that slavery can be extinguished in Brazil, by landing a few thousand troops at Rio, and proclaiming the liberation of all the slaves. The result, says the Review, 'would be a socialist insurrection with no *Cavaignac* or *Garde Mobile* to put it down, the universal massacre of the whites, and the destruction of their property.' The Review does not directly recommend this expedient for our slave States; but as it enumerates them among the States in which British policy dictates the extinction of slavery, we may infer what it *would* do, if it *could*."—*Public Ledger.*

Such are the doctrines of the men who counsel the South to increase its dependence on England! In face of the fact that man has everywhere become free as land has become valuable, they counsel measures that would destroy the value of land, with a view that slavery may cease.

Rely upon it, there is but one way to put an end to free-soilism, and that way lies in a direction *precisely* the opposite of that which is now being pursued. Six months spent in the discussion of slavery to the neglect of everything else, strengthens the cause of abolition to an extent of which you can have no idea. City meetings, made up of traders, most of whom care for nothing but trade, are no indications of the state of feeling. I believe there are ten free-soilers in Pennsylvania for one that was there six months since, and every day's discussion of slavery will only increase the number. Let the South then open its eyes to the fact that it is always weakening its friends and strengthening its enemies, and let it determine to change its course and strengthen the former, and then it need not fear the latter. Let it at once determine to meet the North with a fair and liberal proposition for a settlement, and a permanent one, of both questions, and there will then be no difficulty in making the settlement. That done, free-soilism will pass away, for the possession of power will cease to be an object of interest to the mass of the people, either North or South. It is a weed of Southern growth, and it is for the South to extirpate it. Non-interference is the policy of almost the whole people of the North. Interference is the policy of the few. When the South shall have made friends of the one, it will cease to care for the other.

The papers of the day contain a statement that the chairman of the Ways and Means has said that nothing *should* be done until the slave question was settled. Such a declaration is more efficient than a hundred free-soil articles, and this I say from actual knowledge of its effect upon men heretofore most kindly disposed towards the South, and most anxious for a removal of all difficulties. The same papers contain sundry resolutions proposed for adoption at Nashville, all of which are admirably calculated to promote free-soil and abolition. They assume that the love of union is so great at the North that the South may dictate all the terms of union. Now, I believe that no man can study carefully the phenomena of the last twenty years without arriving at the conclusion that if the line had been drawn in 1832, leaving Virginia and that portion of the South which chose to go with her to legislate for themselves, the States North of the line would at this day have a larger and richer population than is now contained within the whole Union, and therefore that it would be to the interest of the North to say to the South "Let us determine to live together in quiet, or let us peacefully separate. You compel us to be free-soilers and abolitionists, and we would prefer to cease to mix ourselves up in your affairs."

The course of the South is one that would not be persevered in were its people to study carefully the causes of the decline in the price of their great staples; for the result of such an enquiry would be to satisfy them that the power to pay for cotton, on the part of England, is steadily declining, and

that a continuance of this dependence on her must result in ruin. Her market is incapable of expansion, as regards the amount to be paid, and therefore it is that the planter is steadily giving more and receiving less for it. Almost the whole increase in the consumption in the twelve years from 1836 to 1848 was in the two *protected* countries of the world—the *Zollverein* and the United States, while that of the countries dependent on Great Britain was almost nothing; and yet they will insist upon continuing their dependence on her, always an enemy, when a single effort would make themselves independent—and to carry out this determination they quarrel with their best, if not their only, friends.

Of the *apparent* increase in the English consumption during that period, a large portion was produced by the demand of the *Zollverein* for yarn which the confederation were not yet prepared to spin, but which now they mean to spin, having just raised the duty upon it. Allowing for this, the growth of demand in 1847 and 1848, as compared with 1836 and 1837, was as follows:—

English, ...	13 per cent.
Zollverein, ...	130 "
American, ...	125 "
All other, ...	10 "

During a large portion of this period our manufacturers were being ruined by the effects of the Southern policy of 1833. Had that of 1828 been maintained, the growth of the home demand and that of Germany would have absorbed all the excess of product, and more, leaving less than before for England, unless the high prices that would then have ruled had largely increased production, as it would have done. The production by England of commodities to be exchanged does not keep pace with our own, and therefore it has been that we gave in 1845–6 *six pounds* of cotton for *less iron* than thirty years before we could have had for *one*.

Your Southern friends believe that they have now sufficient protection, and proclaim that they will manufacture for themselves and thus "block the game" of the North, which will be compelled to close its mills as those of the South are opened. Such is the feeling manifested on all occasions; and it is one that cannot but be more injurious to the South than to the North, for if they pursue a policy that closes Northern mills they must diminish the consumption of their great staple, and lower its price. Let them, on the contrary, unite with their Northern friends—and be assured that if this question were settled they would find at the North few but friends—let them, I say, unite with the North in the adoption of measures that will cause the transfer of the coarse machinery of Lowell to their own cotton fields, to be replaced at Lowell by the finer machinery that will then be needed, and they will find increased demand and higher prices, and then they will cease to pray for short crops as the only means of preventing ruin. Believe me, there is perfect harmony between Northern and Southern interests if properly understood. Is it not, then, desirable that the question should be calmly examined with a view to ascertain the truth?

It is proposed to establish what is called "reciprocity" with Canada—that is, to grant to the Canadian all the benefits resulting from being within the Union, without requiring of him the performance of any of the duties that would devolve upon him were he within the Union. Remaining outside, he sells his wool at the high price of Lowell, but he buys his cloth at the lower price of Leeds. Were he within the Union he would sell his wool and buy his cloth in the same market. Remaining outside he sells his wheat at the high price of New York, but he buys his iron at the lower price of Wales.

Were he within the Union he would sell his wheat and buy his iron in the same market. The direct effect of increase in our home manufacture of cloth and iron is to increase the home price of raw materials, and diminish the foreign price of the articles manufactured from them. The Canadian is to profit by both and pay for neither. Were the Virginia, or the Michigan farmer to make the same request, it would be at once denied, but that of the Canadian will probably be granted by aid of Southern votes, given with a view to diminish the inducements to annexation. That done, the effect *must inevitably be* to convert every farmer of the North into an annexationist, and free-soil principles will rapidly extend, and thus the result of such an effort in opposition to Northern farmers will be that of weakening Southern planters. Every single effort of the South against the North has, thus far, resulted in increasing the weakness of the former, which never can be strengthened until it shall resolve to act in harmony with its real and *only* friends, the people of the North.

The whole matter may be summed up in a few words. The South is always aiding its enemies and ruining its friends, and it is surprised at the increase in the number of the one and the diminution in that of the other. It is always offering a premium for abolition, and is surprised that its cultivation extends. It is always watering the free-soil tree, and it wonders that its growth should be so luxuriant. Is it not so? Should it continue to be so? Is it not time that Southern men should open their eyes to the fact that their own safety and that of their institutions requires a change of policy?

I beg you carefully to reflect upon these facts, and to satisfy yourself what are the real causes of the serious discord between the two great portions of a family whose best interests require that they should live in harmony with each other. Rely upon it your friends deceive themselves about Northern aggressions. They have been so long accustomed to look at one side of the question that they forget that there is another one. It is a grievance to the planter to lose a slave, but it is a much greater one for the farmer to see the neighboring mill, or furnace, or coal mine, closed, and feel himself deprived of a market for the things produced upon his farm—for the labour of himself, his sons or his daughters—and to see both sons and daughters compelled to leave him and fly to the West for want of a demand for their labour in the East. Between the *real* interests of the two sections of the Union, there is no discord. Let us then try to live together in harmony.

With great regard, I am yours very truly,

———— ————.

COMPARISON OF THE CONSUMPTION OF FOOD BY LARGE AND SMALL ANIMALS.

BY GEORGE SHACKEL.

To Mr. Pusey.

Dear Sir: I was from home on the arrival of yours dated 30th September, or I should have answered it earlier. The lambs which I mentioned to you as having wintered last year were both of the Hampshire breed, one hundred in each lot. I will with pleasure repeat what I stated on Wednesday last respecting the feeding and quantity, and also give you an account of the cost of each lot as well as the proceeds of the sale when they were fat. The two lots were fed at the same time on the same food, and penned on the same ground, but were kept separate from the commencement. I allowed each lot,

when on turnips (because we did not slice the turnips, only the Swedes,) the same sized piece per day; and when on Swedes, which we began about Christmas, thirty-three bushels (sliced) per day, and eighteen bushels of excellent clover-chaff to each lot; and on the 20th of February, 1847, we gave them 1 lb. of oil-cake a-day on an average until they were sold out.

Bought in the last week in October, 1846.

	£.	s.	d.
100 very large Hampshire Down lambs, cost per head . .	2	1	0
100 Hampshire Down lambs, weighing about 1½ stone less than above, and very much smaller, cost per head . .	1	15	0
	0	6	0

The latter were in much better condition than the large ones.

Sold out from the 28th March to 10th May, 1847.

100 lambs which cost 41*s.*, sold at Smithfield and Southall markets, realized on average, with wool, . . .	3	1	3
100 lambs which cost 35*s.*, sold at the same markets, realized on average, with wool, ...	2	9	0
In favour of large lambs, ...	0	12	3

I ought to add that the markets were about 2*s.* per head in favour of the large lambs, the trade for mutton being about that difference, or rather more, when the large lambs were sold, which would leave 10*s.* 3*d.*, instead of 12*s.* 3*d.*, in their favour.

Nothing would be more conclusive and satisfactory than a fair trial, in the same manner, between one hundred of Sussex and one hundred of Hampshire Downs, both lots of their breed of equal value; that is to say, one hundred of best Sussex against one hundred of best Hampshire, kept on the same land and fairly tested out of doors, as a farmer would wish to winter them.

Perhaps you will be able to get a fair trial between the large and small breeds, and then publish the result, which would be more satisfactory than mine.

With much respect, I am, dear sir, yours truly,

GEO. SHACKEL.

Reading, *Oct.* 4, 1847.

Note by Mr. Pusey.

The above trial seemed to me well to deserve a place in the Society's journal, as throwing light upon the question whether large and small animals of the same race do or do not consume food in proportion to their respective bulk. This question is not merely interesting as a point of physiological science, but also in practical farming. A large body of farmers defend the Hampshire or West Down sheep, notwithstanding their plain appearance, by saying that this plain breed comes to a greater weight, and therefore makes a greater money return than the Sussex or true South Down. The breeders of South Down reply that, if their sheep are smaller, more of them can be kept on the same farm. Here, then, the abstract question has a practical bearing. In this second instance there was a very decided difference between Mr. Shackel's two lots, yet the larger lambs were satisfied throughout with an equal allowance of each kind of food; and, though of the same breed, made a better return, by 4*s.* a-head, than the smaller sheep. This plain fact seems to warrant me in calling the attention of practical men to this point of farming.

PH. PUSEY.

THE MARYLAND STATE AGRICULTURAL SOCIETY will hold their THIRD ANNUAL EXHIBITION at Baltimore, on the 23d, 24th, and 25th of October, 1850.

Premiums are offered as usual, from $15 for the best bulls of the best breeds, and of no breed, or natives; down to $1 for pound cake and pickles.

The general heads of the schedule of prizes are, cattle, sheep, swine, horses, poultry, tobacco, and various "agricultural productions," implements, butter, cheese, honey, fruit, vegetables, flowers, household manufactures, wines, bounce, cordials, bacon hams, and though last, certainly not least, for *best ploughing!*

Where premiums are given, for excellence, in the fatness or the weight of animal or crop, is it not to be expected that such *excellence* will indeed be exhibited? for if the competitor, though outdoing all his rivals, shall yet only have accomplished what has in the same line or department, often and for many years past been, not only equalled, but much exceeded; where will be the proof of that general, progressive, and economical advancement, which is the true legitimate aim and promise of such associations? and of that skill which merits to be singled out and held up as something extraordinary; attained by exemplary means? For ourselves, somewhat familiar for thirty years with the origin and proceedings of such societies, we have sometimes thought it might be well for them to name *minimum* quantities or weights, *beyond* which, at least, the winner should be required to go, and that, too, with materials and by a process, which all would admit, *would pay!* What would seem, in a word, to be expedient is, not to give the little money that can be collected, to reward men for doing what it has been a thousand times proved can be done; but to tax the ingenuity and stimulate the pride of the agriculturist, by insisting that the honours of the Society shall only be won by showing, that he who wins them has let out *another link in the chain of improvement!* But in this notion we may be wrong, particularly as, if carried out, it might much diminish the number of competitors, and the ingredients of the show.

The *highest* premium offered for *sheep* of any class, we observe, is offered for the "best *imported* buck and ewe of any description"—even though they may be inferior to native bred sheep on the ground of the same race. With great deference to the better judgment of the Society, we must say we are unable to see the policy of this distinction in favour of imported sheep. Against all imported things, even imported knowledge, there is a root of foolish jealousy, that we should endeavour to extirpate, instead of giving it something to feed upon. We had supposed that the only object of importation, was to increase the means of *improving what we have!* and if, in our country, we can find bucks and ewes of finer fleeces or better forms, than such imported ewes as are exhibited, why discourage the great skill and perseverance which produced that superiority, by awarding the highest distinction to the inferior animal from abroad? If in the case of sheep, as in that of costly cattle of improved breeds, there was difficulty in finding animals of the same breed, but of a different family, with which to cross those we have, it might in such case be well to encourage importation by some inducement—so it might be expedient to offer a premium for the importation of animals supposed to be of value, and not hitherto imported. But even in the case, for example, of imported short horn or other improved races of cattle, where the increase of our stock to select from must necessarily be very slow, would it be right even there, to give for an imported Devon or short-horned bull, merely because he was imported, a higher premium than you would give to a superior animal of the same breed, produced at great expense and care by Mr. Calvert or Mr. Patterson, or Col. Capron? Suppose the two competing animals to be put

up to be let for the season to a judicious breeder of fine woolled, or of mutton sheep—for which would he bid highest, for the superior native "buck and ewe," or for the inferior imported? Would it be flattering to the judgment of the Society, to see such a breeder passing by the animal to whom they had awarded their highest premium to give more for one which had taken the lesser prize?

These remarks, if of any force whatever, apply more particularly to sheep, because, even if the Society required that the imported should be at least equal to the best native, (which they do not,) there is reason to know that there is no difficulty in procuring, in our own country, any number of "bucks and ewes," especially of the fine woolled race, at least equal to any to be had from abroad, and at prices far less than they can be imported for, and the breeders of such, may consider it poor encouragement to see the highest premium given by the Society to animals confessedly not equal to their own.

For our humble selves, we are strong advocates for imported animals, quite equal if not superior to our best, especially in the case of cattle—for full bred cattle are not yet improving in our country, on the imported stock, nor do we believe they will, over the improved cattle of England, for various reasons, viz:—want of experience, and the skill which is the fruit of it, and want of capital, while our feeding is inferior and our climate not better for cattle. For sheep it is otherwise. For fine woolled our climate is better, and the latitude of choice for breeders is ample. Hence we would sooner go to Col. Randall, of New York, or to Mr. Patterson, of Pennsylvania, or to Mr. Cockrill, of Tennessee, for breeding stock, than to take our chance in any foreign country, even Saxony; for while we should expect to get the animals equal at least to the Saxon, we should get them much cheaper. But so much is that success to be desired, in the improvement of our sheep and other animals, which is alone to be attained by great and constant care and vigilance, that for ourselves, all other things the same, we would give the highest prize to a native animal of superior, if not of equal merit.

The reader may think we have occupied too much space with a small matter, and so should we, if it did not *involve a principle;* but as Dr. Sangrado said, how can I give up the use of hot water and the lancet; have I not written a book to recommend them? So in this case, we presumed briefly to hint our doubts as to the propriety of giving a premium which might light on inferior sheep, merely because they were imported; but as the society determined advisedly to do so, it is not to be doubted they were right, and so we give up the point.

As to the qualifications of the judges appointed to award the premiums, their characters, far and widely known, offer, if they will serve, every moral assurance of fairness and good judgment. On this point, almost above every other, great pains should be taken to ward off the suspicion of ignorance or favoritism. Nothing so certainly or deservedly destroys public confidence as the idea, of a certain set of men getting, by long association, banded together, and *playing into each other's hands.* There is no point about which, in England, greater solicitude is manifested; so far is it carried, that those who recommend and nominate judges, are held responsible for, a belief not only that they will be present and serve, but that they are altogether, directly and indirectly, disinterested.

Finally, our poor belief is, that if this and all other societies and individuals, would "act in a body," and enforce a policy which would compel all those who now manufacture for us, all the clothing we wear, and all the iron we use, to come and manufacture it here, where we have the raw material in our own country, it would do more for the *general improvement* of agriculture, than has been accomplished by all the agricultural societies that have

been formed, as they have been, from before the revolution to the present time.

FARMERS AND FARMSTEADS IN BALTIMORE COUNTY—OLD REMINISCENCES—CIDER MAKING AND CIDER BOTTLING.

Early in June, enjoying for a few days the rare opportunity of snuffing the country air, we made a flying visit to two or three excellent farms in Maryland, peeped into their barns and dairies, supped their nice "slip," and feasted on their fresh and honest cream and strawberries, and wished ourselves in the place of their owners, and they better off, if that could be; but how or where, imagination cannot well conceive, unless it were in heaven.

Two of these farms, Mr. C. T. Williams and Col. S. Stone's, lie in that magnificent limestone region, known as the "Green Spring Valley," in Baltimore county; the other, Mr. Perrine's highly improved farm, lies to the left of the Govanestown road, about five miles out from Baltimore.

Col. Stone's estate of *only* 1100 acres, has been gradually brought into a high state of productiveness, by thirty years of *hard knocks*. While Mr. Perrine's has been highly improved and embellished, in one-sixth of that time, by a very different process, to wit, by *hard money!* Showing how capital and taste may effect in a few years, what patient industry, however skillfully conducted, can accomplish only after five times as many.

An exact account of the processes and results, in each case, supposing all the materials and elements for it to have been preserved, would make a highly instructive agricultural memoir; far more instructive and salutary, than nine-tenths of the premiums given for heavy bullocks and swine, and heavy crops on acres of land. Of these last, sixty bushels will sometimes command *a premium*, although we have authentic accounts of *more than double that quantity, more than thirty years ago.*

Such a memoir would teach us on the one hand, how it is possible to take a farm, saddled with debt, and by extraordinary industry, judgment and perseverance, make it work out its own salvation, put up its own buildings, plant its own orchards, fertilize its own bowels, and dress itself with verdure; nothing being deficient to complete the scheme of rural contentment and felicity, except that without which, *Eden itself had been a wilderness!* Yes! your hens may lay a thousand eggs, the lowing herd come home with teeming udders, bees may swarm, adding mellifluous hive to hive, your walls may be covered with beautiful pictures, and your cellars overflow with cider sweeter and wine more aromatic, than the nectar of the gods; but what will all avail, in the absence of that fair and beloved one whose approving smile gives to all a seasoning relish, as the capital crowns the Corinthian column! No! no! Could Solomon himself appear to the bachelor who has thus surrounded himself with all else that heart could wish, he might repeat the exhortation—of all thy gettings get wisdom—and, as a wife is "the principal thing," therefore be wise and take unto thyself a wife!

Well! the other memoir in this case would read us a lesson, perhaps not less instructive, for it would teach us how he who has capital, *can* make hay while the sun shines; and how necessary capital is, to the earliest enjoyment of a thousand luxuries in the country, that money itself cannot elsewhere purchase. For where else can you sip the fresh cream as it rises to the surface; where the fragrant strawberry, as it ripens on the vine; where the delicious air as it comes sweetly floating over fields of clover and beds of violets; where else be awoke by the matin songs of birds, that come under your lattice warbling their artless songs, secure and grateful in the enjoyment of their natural freedom;

and above all, where else can you so perfectly enjoy your book or your thoughts, in such delightful and unapprehensive quiet, as in an easy old arm chair in the piazza or the shade of some venerable old tree, with a table and pen and ink at your elbow? convenient to note what strikes you, as for instance, we were just struck with the truth and force of this remark—"That learning, however various and valuable, which is buried with the possessor, is more worthless than his riches, which descend to his posterity." The moral we would draw appropriately from this is, that *every Farmer is bound to communicate for an agricultural journal, whatever he may suppose would in practice improve the management and property of his neighbours.*

But returning to the Farms alluded to, it was not to describe them, their fixtures and embellishments, for which our transient observation did not prepare us. What brought them to our mind was the promise on the one, and the presence on the other, of a great variety of *choice orchard fruit trees;* and of these we were reminded by thinking that now is the time to give directions *for making and bottling cider!* For this branch of husbandry Col. Stone has extensive arrangements on the most improved and liberal scale. We are not familiar with the best proofs of his success in this department, but that is no reason why *we never should be!* being quite sure it would form one of those exceptions, to all general rules, one of which says "familiarity breeds contempt."

In the meantime, we will submit to our impatient readers, two or three directions for conducting these operations. One for *making* cider, from the far South, communicated many years since by that very observant and patriotic citizen, so well and popularly known and remembered, General Calvin Jones. Another, by the late Thomas Hillen, who so much excelled in whatever attracted his personal care. What old resident of Baltimore is not familiar by recollection, with the excellence of *Hillen's Butter* and *Hillen's Cider?* Then in August, if we don't forget it, we will give instructions on *bottling cider*, communicated to the writer many years ago, by his esteemed friend, the late Doctor Wilkins, who carried into all his practical field and most minute domestic operations, an eager spirit of philosophical investigation, that prompted him not to be content, as most of us are, with skimming the surface, to enjoy in ignorance, the good things that nature provides; but to stir everything and get, if he could, to the very bottom, there to learn their very nature and essence. He would be as anxious and tireless, in finding out, for example, *why* cider burst the bottles, or *why* his bacon contracted rust, as he would have been to learn why a steamer *bursts* her boiler and kills thousands of people; or to trace the moral, or rather the demoralizing effect, of that accursed discovery of gold mines in the mountains of California, about which God, as if to destroy us, has first made this nation mad.

What Mr. Hillen says about ripple grass, or narrow leafed plantain, was in allusion, the reader must be told, to a vehement recommendation of it, as an excellent food for dairy cows, by friend Caleb Kirk, of Delaware. Ah! how stealthily and yet steadily time moves on his course! What is here given from Mr. Hillen, was written to us more than thirty years ago, and yet, after all our premiums and all our teachings, can any one tell us how to make better *butter*, or better *cider* than "TOMMY HILLEN'S?" We doubt if it can be done.

"RECEIPT FOR MAKING CIDER, AND PRESERVING IT SOUND FOR YEARS.—Three months ago, I was at the house of Nicholas Nall, Esq., who lives near Deep River, at the upper extremity of Moore county, where I drank *old* cider of a very superior quality; and as the habitual use of cider is eminently conducive to health, insures sobriety, imparts the agreeable sensation of strength and vigour, and is a pleasant beverage that can be afforded at a small expense; I took care to be exactly informed of his manner of making, refining and preserving it, in hope that advantage might accrue in

the publication of it. Mr. Nall had in his cellar, as well as I now remember, about eight or ten hogsheads and fifty or sixty barrels of cider of different ages—the oldest was best; nor did he think any fit to drink until it was at least a year old. That which I drank, was three years old and it was excellent. His oldest cider I did not taste, as he intends it as a treat for his executors. He complained that his stock was too small to drink it of the age he wished; but intended to fill another cellar. I here copy Mr. Nall's receipt, as he gave it to me in writing in April last:

"'All apples fit to be eaten, will make good cider. The grand secret is in cleansing it from the filth and dregs as early as possible. Each sort of apples are to be beaten and pressed by themselves. Two kinds of juice, both good, would, if mixed often make bad cider. Throw out all imperfect, sorry, and sunburnt apples, as well as dust and trash. Beat your apples before much mellowed; as they lose their strength, soundness, and spirit, if too mellow. Let them stand half a day after being beaten, before put into the press; then press them slowly; discontinue it as soon as the juice appears thin and watery. The advantage of slow pressure is in making the liquor run pure. Let your casks, previously well cleansed, be filled quite full, to permit the froth and pumice to discharge itself at the bung. When the fermentation abates, cover the bung closely with something, that may be lifted by the fixed air that escapes during the future fermentation. In a week rack off the cider carefully, ceasing the moment you observe it to run muddy: now stop the cask more firmly. In ten days rack it off a second time: and in fifteen days a third time. In every instance, the cask is to be clean and perfectly filled; and when filled for the last time, to be bunged close in a deep, dry, cellar, never to be moved until drawn for use. Late cider need not be racked until March, and then one racking, or at most two, will be sufficient. Be very careful that no water, not even the little that will adhere after rinsing the cask, is mixed with the cider. The smallest quantity of rain water will render cider unfit to keep. The addition of any quantity of distilled spirits is not only useless, but injurious.'

"Mr. Nall's method is the result of long experience, and its success justifies me in recommending it to the public. I hope it will be tried. CALVIN JONES.

"*Raleigh, July* 25, 1819.

"N. B. I ought to have mentioned that Mr. Nall told me, he had for many years tried various plans for clarifying cider to prevent its souring, by means of milk, isinglass, scalding and scumming, filtering through sand, &c., &c., and found all useful: but is satisfied that frequent racking or drawing is far preferable to any other method he has attempted."

"Sir,—I have just observed in your paper of the 15th instant, a communication from a correspondent in Lexington, Va., upon the subject of *fining and bottling cider*. Stating therein, that 'the best he ever met with, was some years ago at the Indian Queen, which he understood was bottled by a Mr. Hillen about ten miles from that place.' As no othes person by the name of *Hillen* at that time, sold cider in the neighbourhood, I take it for granted that I am the person alluded to. But, sir, there must either have been a mistake, or misapprehension, as to the *bottling*. I never bottled any for market, but have frequently supplied the cellar of Mr. George Benner, of Baltimore, with cider *by the quantity*, and have no doubt but Mr. Benner has occasionally furnished Mr. Evans, the then landlord at the Indian Queen tavern. Were I to attempt a word of advice to your correspondent on the subject of *making* cider, it would be to avoid all rotten fruit, leaves, &c., pick up his apples as early as possible of mornings, when cold, or, at least *cool*, and grind them so; when ground, strain it through a sifter into a large trough or cistern, let it stand about two or three hours, until the fine sediment falls to the bottom, then rack it off into clean casks and let it stand and work until the foam *begins to dry* at the bung; then fill the casks up with cider *of the same quality*, and stop them as tight as he can with straw bungs, or, if *wood* bungs, they must have ventilators for fear of bursting. When they become *perfectly dry at the bung* (if straw) drive a sharp plug into the bung to exclude the air; in November rack it off through flannel into clean casks again, and let it stand till spring for bottling.—I am not sufficiently acquainted with *bottling* to offer any advice as to the best mode. Yours respectfully,

THOMAS HILLEN.

"P. S. Sir, it seems that *Farmers*, as well as *Doctors* may differ in opinion. I observed in one of your papers a few months ago, that one of your correspondents had written in commendation of *ripple grass, ribwert*, or, (as I think he termed it) *ribbed plantain*.—Should the gentleman's crop of this article *fall short* next year, and it were possible for me to transmit him all my share by mail, I would most cheerfully pay the postage.

T. H."

Now, good reader, we don't fail to remember, that but a small portion,

comparatively, of our readers, are cider makers, but that is no reason why those who are, should not be told of the practice of men eminently successful in the art. It takes, besides, many sorts of people to make up a world, and moreover, many who are not now, may hereafter become provident enough to plant and cultivate orchards. There is no worse sign for a Farmer, than the absence of *good fruit well cultivated.* It warrants the suspicion that he too may be, like the hemp growers of Missouri, preparing in his mind to run away from "wife, children, and friends" off to California, in the hope of drawing as a prize in that great lottery of corruption, that competency which he has not the fortitude to dig by honest industry out of his own ground.

If you don't want to learn about cider making, only tell us what you do want, and we will engage to get the latest and best information.

HOW POPULATION MAKES THE FOOD COME FROM THE RICH SOILS.

A Butter Maker.—Mrs. Marinda Hines, who has been a subscriber to a Greenfield paper without giving the proprietor any trouble about collecting his pay, shows herself in the following extract, a most notable dairy woman:

"I have five cows and have sold the past season 1300 pounds of butter, besides, milk, cream and butter for family use. Our family will average eight. I raised seven calves last spring, and some late, two of them I got of my neighbours. I have fatted 750 lbs. of pork, mostly on sour milk. Now let us leave one of the cows for family use, and set the credit of the other four, say 1300 divided by 4, makes 326 lbs. to each cow, the butter sold averaging 16½ cts., 325 lbs. at 16½ cts. makes $52 62 to each cow. The seven calves were worth 30—say 25 to four cows; and five hundred of the pork at $6 will be 30; and the 25 dollars for the calves, makes 55, divided by 4, leaves 13 75 to each cow; this added to $53 62 will make $67 27 to each cow, or $269 08 aggregate.*

"My cows are about middling size, and of the native breed. They have a good pasture in summer and good hay in winter, and that is all; except in winter, I sometimes give old Brindle a few small apples and potato parings, and the like, to make her hold out her milk until some of the others come in. When I see anything in the butter line in your paper that beats the above, I will try again."

* At this rate, a Virginia farmer keeping 20 cows, as many of them do, to get milk and butter for their families, might make from their butter alone, without any diminution of their staple crops, $1340 a year, that is if he could *reckon* on 16½ cents per pound for butter, $4.50 for a calf, and 6 cents per pound for pork, and who can doubt that he might do so, if, instead of following through brambles and briars, political bell-wethers, who keep up the ever lasting song of "free trade"—"sell where you can get most, and buy where you can buy cheapest" at the moment, he would see the importance of working up the natural resources of the State. Then (the farmers) would *think for themselves*, and insist on a steady encouragement of American industry; such as would bring oppressed labourers from abroad, as *consumers* into all parts of the commonwealth, there to delve her own coal—to dig her own iron from the mine—to weave her own wool—to work up her own leather and timber, and eat her own flour, and beef, and pork, and potatoes, and cabbages, and milk, and apples, and butter, and rye, and even her own blackberries. For where people are at work and well paid for it, at the loom, and the anvil, at the work bench, and in the mine, and the forge; *everything* will command money—there it is, that men learn to *feel* that time is money. In Rhode Island, around ninety odd manufactories, there are 60 distinct villages—see Mr. Kings communication in this number. In Virginia, in proportion of area, materials, water power, coal, iron, timber, capacity for producing wool, and other natural resources; there ought to be at least ten manufactories, and one hundred *consuming* non-*producers*, of agricultural products, where there is one in Rhode Island, and *would* be, were it not that we are, and *ever have been*, even without knowing it, subservient to the *colonial policy of England;* who, while she sings to all the world the cuckoo song of free trade, is staggering under a debt of £800,000,000 ($4,000,000,000) sterling, to force all the world to go to her, as the "work shop of the world" to get that which, if let alone, they would make 'for themselves. Ah! we are a wise people, and should take care, as Mr. Bulwer says—not "to offend British public opinion."—*Edit. P., L. and A.*

HOW THE LOOM WORKS BY THE SIDE OF THE PLOUGH IN RHODE ISLAND.

Woodland Farm, Manton, R. I., June 4, 1850.

My dear sir—The inquiries with which you, and several gentlemen at the South and Southwest, have just favoured me, indeed cross the track of investigations, in which I have been engaged of late, but these are so far from being completed, that I would not now pretend to make use of them, but for your friendly urgency.

The statistics of the cotton and wool manufacture in Rhode Island have been collected with considerable care and exactness, as desired, and full, and I trust satisfactory replies may also be found herein, to the other queries addressed to me.

You yourself, my dear sir, upon the occasion of your visit to Rhode Island last summer, saw one branch of the "Pactolus," which rolls its golden tide through our State.

The "Woonasquatucket," as the stream that borders my farm is named, may be taken as a fair sample of the water-power of Rhode Island.

The length of this brother of the Mississippi is about twelve tortuous miles; its width may be generously averaged at twenty feet; its depth at three feet, and its rate of current at four miles per hour.

And yet with its writhing flow, it drives twelve manufacturing establishments, with an aggregate of 37,584 spindles, employing 820 hands, and turning out 7,636,218 yards of goods per annum; print-goods, sheetings, and Kentucky jeans. One large mill, with a capacity of 10 or 12,000 spindles, is also being built upon the site where one was destroyed by fire some years ago; but to what purpose it will be devoted is not precisely known.*

The condition of the water-power; that is to say, the smallness of the streams, has sprinkled the State with manufacturing villages. Of the 198 establishments engaged in wool and cotton, 160 form, each a distinct and separate village.

Allendale, the property of Z. Allen, Esq., particularly attracted your attention, I remember, by the picturesque appearance of the mill and its surrounding cottages and gardens and groups of shade trees; the beauty of its Gothic chapel, built of stone; the dimensions, tasteful architecture, and fine location within a grove upon a hill-top, of the school-house, for the children at the mill, and of the district; toward the erection of which Mr. Allen contributed one thousand dollars.

* We cannot help noting, in this, a characteristic difference between northern and southern people. If, in a southern State, such an edifice was going up, every man, woman, and child in the county at least, would know all about it—how much it was expected to cost, what work it was to do, what profits anticipated, who were the stockholders, &c. This results, too, from the vacuum or want of employment for mind and body, in all communities of one idea—or one occupation, as described by Governor Hammond. In New England, where it must be admitted there is no lack of curiosity, or defect in the faculty of guessing, there is yet something to employ every power of mind and body. There, every man is busy all the time and every man keeps his own secrets as to the use of his capital and the results; and the more he is making the closer and darker he lies. There you see no groups of idle men lounging about bar-rooms and country stores, smoking and whittling sticks, for want of something to do. Where the loom and the anvil are close to the plough and the harrow, men feel that minutes are hours, and that "seconds are the golden sands of time."

There is one element wanting in viewing this question—that is, the cost of water-power in the North, as compared with the South—how vast is the difference? There are water-powers in the South, and coal mines that might be had almost for a song, that in the North would be worth hundreds of thousands. We could designate many such—the same of timber lands.—*Edit. P., L., and A.*

This, perhaps, is as favourable a specimen of one of our factory villages, as you could have chanced upon; and if your leisure would have permitted a stroll thither upon the Sabbath, the appearance of the well-dressed and well-behaved operatives of the mill, wending their way to hear the preached Word of God, your favourable impressions would not have been diminished.

It was incidentally mentioned above, that there are 198 cotton and woollen mills in the State.

Of these, 53 are running on print-goods with 219,985 spindles, consuming 5688¾ tons of cotton, employing 4442 operatives, and turning out 50,400,500 yards of print-cloths per annum.

Forty-four (44) mills, with 178,208 spindles, are engaged in making sheetings and shirtings; these consume 4,113 tons of cotton per annum, and with 3,820 operatives, turn off 29,839,436 yards.

Thirty (30) mills, with 27,563 spindles, and 475 hands, consume yearly 721 tons of cotton in the manufacture of 628 looms of cotton warps, cotton yarn, and thread.

There is one mill at work on diapers, making annually 160,000 yards; one on bagging, making 188,000 yards, and one on Osnaburghs. These mills with 5,308 spindles, consume in the aggregate 249 tons of cotton per annum, and employ 165 hands.

Besides these, there are three mills employed on batting and wadding, of which they roll off, as nearly as I can learn, 2,060 tons per annum, with 17 hands.

There are also one or two establishments for the manufacture of wicking, braid, &c. Of these we can obtain no statistics, but enough is known to convince the most sceptical, that princely fortunes have been spindled out to the enterprising proprietors; and to excite wonder, that there should be so little competition in this most lucrative branch of business.

Of woolen mills there are 37, working on satinets, flannels, linseys, cassimeres, tweeds, Kentucky jeans, coarse kerseys, &c. &c.

These mills run 29,105 spindles, employing 1,532 hands, and working up 1,722 tons of cotton and wool, in the making of 5,944,000 yards of goods, and twelve and a half tons of worsted.

Twenty-two mills are still.

We have also 12 calico-printing works, &c., and 8 establishments for bleaching and finishing, dyeing, &c., employing in all 1,209 hands.

Thus 198 mills, with 431,064 spindles, consume annually 12,907¼ tons of raw material, and turn-out 80,627,136 yards of cloths, with 628 tons of warps, thread, &c., and 2,060 tons of batting and wadding; and with the calico works, &c. employing about 12,000 men, women and children.

The census of 1840 gives to Rhode Island 250 cotton and woolen mills, with 13,047 operatives.

The present is a sad moment to collect the manufacturing statistics of New England. Many of our mills have stopped; many of them are working with two-thirds of their usual force; many of our mill owners have failed, and none of them, to the best of my knowledge, are making any great amounts of money. Our markets are overstocked with English goods, which are selling in New York, at twenty-five cents below cost, and the "cry is '*still they come.*" A beautiful nut by the way, is here presented to the open jaws of our free trade friends. *As soon, say they, as prices cease to be remunerating, the supply will cease.*

Whereas, the facts are notorious, that not only are English dry goods selling for twenty-five to thirty per cent. below cost, in the New York market, but American grain and flour commands more on the New York wharf, than at the Liverpool docks, transportation charges deducted, and yet *the importations, in both cases, are undiminished.*

With an immense stock of goods on hand, the English manufacturers will contrive to push their fabrics upon us, *as long as they will sell at all*, regardless of profit. They have two chances in their favour. 1st. Even fifty per cent. below cost is better than a total loss; and 2d, there is a chance, and a fair one, we must acknowledge, that American competition must soon give way before the perseverance and long purses of their trans-atlantic rivals.

The knell of the manufacturing interest of this country, whether cotton, woolen, or iron, has sounded, unless the agriculturists of the Union, the farmers of the North and the planters of the South, interfere to change its toll into a peal of joy. And, as its iron note now jars upon my ear, it is for ourselves, farmers, not for the cotton-kings, that I set up my small howl.

Here in Rhode Island, the smallest (not the least), of the sisterhood of States, are twelve thousand consumers employed in the mills; many with considerable families otherwise employed; but all gifted with good appetites and well paid for their labour, to enable them to buy corn-meal and flour, molasses and sugar, pork and beef. In palmier days it might be safe to state their number at fifteen thousand, a tithe of our population.

These men, women, and children, these "*fruges consumere nati*," from profitable customers become, upon dismissal, formidable rivals; then a fig for farming, my friend; I should apply for the charge of a toll-gate. Politicians are apt to throw away their sympathies, or their spite, upon the *manufacturers* in discussing the policy of protection.

As a body, the New England manufacturers have no claim to either of these compliments. *Capital will always protect itself*, in the long run. The manufacturing interest of New England may be crushed, and much individual suffering may ensue, but her citizens will continue to thrive under any policy, that is *stable*.

The same indomitable energy that transferred her strength, at the bidding [mainly] of [southern] wisdom, from the ocean to the mill-stream; dotting the land with cotton-mills, as she had clothed the sea with her canvass; will never fail New England in her hour of need.

The houses and lands of the Athenians were laid waste by the Persians; but Athens, none the less, tarried and triumphed at Salamis.

I speak of New England, because she is around and about me; but it is not only New England, but American character to adapt itself to circumstances, *by triumphing over them*.

The conclusion to which I come, my dear sir, from a consideration of all circumstances, is, that *protection to the American loom and anvil is of vital importance to the interests of the American plough;* of equal, if not greater importance, to the tiller of the soil, than to the twister of thread, or the beater of iron.

Many inquiries are incidentally answered above, and I now give replies, to the best of my information, as to the cost, &c., of machinery for cotton-mills, and for the manufacture of *plaid* linseys, the only kind, to my knowledge, made in Rhode Island.

The entire cost of new and reliable machinery for a cotton-mill of 10,000 spindles, with all the appliances of bandings, counter-shafts, &c., for No. 30 yarn; and including also looms, dressers, pickers, and cans, complete, is about ninety thousand dollars.

The dimensions of a building to accommodate the machinery, varies with the kind of machinery employed, and the style of cloth manufactured.

A friend informs me that a new mill now about being put into operation on No. 14 sheeting, is 268 feet long by 68 feet wide. Five stories high, with a picker-house attached 60 by 40 feet, and two stories high.

The cost of mill-buildings, water-power wheels and tenements for operatives

is about ten dollars per spindle, and the number of hands required for 10,000 spindles would vary from three to four hundred. One-fifth or one-sixth of these would be men, the remainder women and children.

The wages of the operatives differ, of course, according to the work they are engaged upon, the skill of the individual, and, in some branches, the rapidity of his manipulation (many being paid by the piece, &c.). A fair average here would be $4 50 per week for men, and $2 00 for women and children. Of course, the operatives, or the great body of them, for running a cotton-mill at the South, must be imported from here or from Europe, for some years, and from the nature of the climate, &c., larger wages might be anticipated by them, than they now receive at home. There is doubtless, however, in the Southern States much capable force comparatively unemployed, that would come flocking in to manufacturing establishments, baited with money, as, when the gardener rears a bed of flowers, bees come to gather honey from—you know not where. Linseys also are of various qualities and styles.

The kind of which I now make an estimate are rather coarse, weighing 4 to 4¼ ounces. 32–34 picks to the inch. 3 colours in warp and filling.

To operate 1000 Jack-spindles, would require 54 looms, 3 setts of cards, each consisting of 3 cards, 2 breakers, say 48 inches wide, and one finisher 40 inches wide, 2 spoolers 24 heads each, 2 warpers, &c. The cost of such machinery would be $18,000.

The mill should be 120×32 feet. 2½ stories high. Dye House 60×24. Dry House 50×32.

Such an establishment, with about 25 hands, would weave 3000 yards per day.

I have been favoured by Mr. J. L. Barber, of Mapleville, R. I., with a description of his establishment as it now is, in running order, and from his intelligence and experience, you may be assured that the mill is doing all it ought to do, and is rigged as it ought to be.

"I run 18 looms," writes Mr. Barber, "1 sett of (3) cards, 2 breakers 48 inches wide; 1 finisher 40 inches wide; 2 Jacks, one of 200 spindles, the other 160; 1 warper, 1 spooler, 18 heads, 1 wool picker. We make about 4500 to 5500 yards per week. The cost of this machinery, in running order, was $6000.

"I use one room 85×36 for cards, Jacks, looms, spoolers, and warpers. The picking is done in an outer room adjoining, as is also my finishing; this last room is 19½×20. My Dye house is 40×18. Dry house 36×18, and 2 stories high. Stock house 13×24, 2 stories. Drug office 16×12.

"I employ 1 overseer and myself (and we do the finishing), 9 weavers and 1 spare hand, (all women,) 5 on preparing warps, (4 girls from 12 to 16 years old, and one woman warper, *a good hand*,) 2 men spinners, 1 carder, 1 picker-tender and Jack of all trades, and 2 dyers. This constitutes my force, and if I were to commence anew, I should not know how to make any change for the better."

I am conscious, my dear sir, how unsatisfactory must be the result of my labours to you, and to our inquiring friends, but this is partly owing to the vagueness of the inquiries themselves.

The statistics of Rhode Island have been introduced at greater length than was necessary for a reply to queries, because I desire at some future day to attempt, in my humble way, an illustration of the benefits resulting from the harmonious action of the Loom and Anvil with the Plough, and I do not know a better "working model," than this noble little State.

"Very truly, your friend,

WILLIAM S. KING.

J. S. Skinner, Esq.

ON THE CONSTRUCTION OF PLANK ROADS—PLAN, MATERIALS, COST, AND DURABILITY.

WASHINGTON, *May* 25, 1850.

J. S. SKINNER, ESQUIRE:

DEAR SIR—In reply to yours of the 8th inst., I have to say that I have seen plank roads constructed, and have rode on them, and am interested in two, of considerable extent.

There are three of these roads that touch on my farm, and pass on it over two miles. They are the best roads imaginable—better by far than the best paved or "macadamized" road—pleasanter for the person riding—easier for the animals, and far less destructive to the carriages that roll upon them.

In the State of New York they have adopted, by common consent, a grade of not over one foot in sixteen, and this is rigidly adhered to. A good span of horses will draw on a road of that grade, an hundred bushels of wheat thirty miles in a day with ease; a smart span of horses will draw forty hundred forty miles a day. I mean horses of good breed, action, bone, muscle, &c., horses that will weigh when in good working order nine hundred each.

The average motion of the stage on these roads is eight miles an hour.

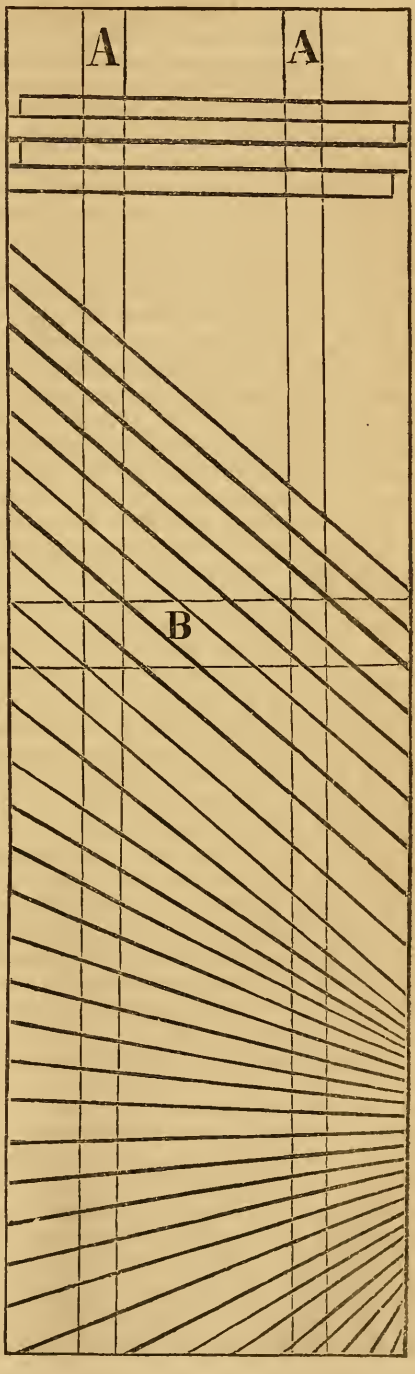
A very little snow—six inches is enough to make capital sleighing, and you can drive in the night as well as in the day, for the horses will instinctively keep the road. The roads are usually eighteen feet wide, and the centre of it only is covered with plank eight feet long. In a very sandy soil there is no need of a raised road, as the porous nature of the soil absorbs the water without the aid of any drain.

In other soils the road is formed like a turnpike, with suitable well-formed drains or ditches each side, giving the best chance for the water to run off. The intention is to have no water standing on the road, or by its sides. Your road being thus formed, the first process is to lay the "*stringers*" as at AA. These should be of two inch plank, and not less than one foot wide, and on every account, are far preferable to square scantling. They should be so imbedded in the road, that the soil or material of the road should be plump up to and even with their upper surface; and at such distance apart, say four feet from centre to centre, as that the wheels of the carriage, with the ordinary length of axle, will travel over the centre of the stringers. These stringers are both to be of the same grade, and the same level.

The stringers being laid, for a short distance ahead, the planks are laid on them. To do this with accuracy, two parallel lines are stretched on the outside of the stringers, eight feet and about six inches apart. The first plank that is laid, will, of course, touch the line on one side, while its other end will not quite touch the opposite line. The second plank will touch the line on the opposite side, and leave a space between it, and the line which had been touched by the preceding plank; and so on alternately, so that there will be a *jog* on each side for the outside wheel to catch on, and recover its place on the road, when by any means it has got off, both wheels resting again on the plank instead of cutting a rut in the earth at the end of them.

When the plank is laid, the stringers must have no earth or other matter or material on their surface; and each plank must be settled with a "commander," or large wooden mallet, until it rests flat and plumb on the stringers, and solid on the ground from end to end, no space being left for air beneath them. Each plank should be laid close to the preceding one, and driven up to it with the commander. No pinning is necessary. When the road is thus well laid, it is very difficult to raise a plank. It can hardly be done, except with a lever. The plank being laid, the next business is to em-

bank a little more earth on the sides of the road, so as to raise the road on each side at least three or four inches above the surface of the plank. It will soon pack so as to be on a level, and should not be permitted to be when packed, lower than the surface of the plank—thus the planks are kept from moving endwise, and it is easy to get the wheel of the wagon on to the plank, when it gets off when one carriage is passing another, or otherwise.



Where there is no heavy grading and not an unusual amount of bridging, and where plank can be delivered on the road for five dollars a thousand, one thousand dollars will pay for making a mile of plank road.

There is some inconvenience and some additional expense in cutting the plank only eight feet long, that length is not suited to the sled on which the plank is brought in winter from the woods to the mill, and it requires a greater number of logs to be loaded, and sawed, and a greater number of plank to be handled. This inconvenience may be obviated by cutting the logs of any convenient length; say twelve feet, and laying the plank *diagonally* across the sleepers. It is needless to add, that when thus laid, the sluice-ways are covered without the aid of cross pieces. This mode of laying the plank diagonally has not found much favor, but it is thought that planks thus laid will wear longer than if at right angles with the stringers, and that the wheel rolls easier on a plank lengthwise, or partially so.

But if this mode is adopted it is desirable that there should be at intervals of half a mile a change in the direction of the plank, as is illustrated in the diagram, which also shows the position of the stringers, and the mode in which the sluice is carried, as at B. Unless there is this change in the direction of the plank, the wheels of the carriage will crowd and grind on

the same shoulder of the axle and the same linch pin all the time. It is a proper precaution to have "washers" against both the shoulder of the axle and the linch pin always covered with some anti-friction composition; otherwise in fast driving, the hub of the wheel will heat. There is in most axles, what is called the "gather," that is an inclination which induces the wheel to run *on*, rather than *off* the axle; there is no inconvenience in this on commons roads, for its effect is continually counteracted by the inequality of the road. On the plank road where the planks are laid at right angles with the stringers, the tendency of the wheel that has a "gather" in its axle, is continually to crowd the shoulder. There is no use in this gather anywhere, and it is particularly injurious on plank roads. There is much saving in sawing the logs through and through, and then edging the plank; and there is no need that the plank should have square and full corners on each side; it is enough if on the under side of the plank both bottom edges are straight, for an inch of its width from end to end. The "*wane*" on the upper side, will immediately fill with dirt; but it is well not to place two waney planks together, and always lay the waney side of the plank up. Waney is a word in common use, as distinguished from straight. As to the durability of these plank roads, the estimate is, that they will require to be covered once in seven or eight years, unless there is so much travel as to wear out the plank sooner, which is an event devoutly to be wished; but the stringers being continually moist and nearly excluded from the air, will outlast three coverings.

I have no doubt, that in the free use of pulverized charcoal, or some other antiseptic material to imbed the plank in, the means will be devised of saving the plank from rotting, and I have no doubt that a thin coat of hot pitch, on the top of the planks, with gravel sifted on, would in a great degree prevent the planks from wearing out.

In common roads, where lumber is plenty, the plank road is the greatest improvement that has yet been made; and we, who have spent most of our days where, in the spring and fall, the roads were nearly impassable, and in the summer none too good, are impatient when we reflect how much needless toil and expense we have undergone, and how much we have suffered, by being jolted over corduroy roads. I have no doubt that a plank road from Albany to Sackett's Harbor would have saved the government, during the war of 1812, ten millions of dollars.

The toll house should extend across the road, so that when the traveler stops to pay toll, he should be under the shelter of the roof, and it is desirable, that it should be a comfortable dwelling, with cellar and cistern, and well and garden, and then the plank road company will be more likely to obtain the services of a civil, respectable, and honest family, to tend their gate. The gate should "*swing*"—accidents are apt to occur if the gate is made to rise. I have thus, I believe, given an answer perhaps too tedious and minute to your inquiries.

I remain, with great respect, your obedient servant,

CHARLES E. CLARKE.

BURLINGTON AGRICULTURAL SOCIETY.

This Society will hold its Fourth Annual Fair at Mount Holly, New Jersey, on the 9th October, 1850. It has done the most sensible thing we have lately seen done by any Society. Its premiums, instead of being offered in "base lucre," which the farmer can get by selling a hog, or a sheep, or a few bushels of potatoes, are offered in *knowledge—precious, priceless knowledge*—in the form of *appropriate books*. And there, after all, is the most disreputa-

ble impediment to the progress of agricultural improvement—that is, the neglect of parents to cultivate with their children, the *habit of reading!* Hence it is that we see so many farmers entirely destitute of books—and so many farmers, *totally unused to the habit of reading* to see what has been done, and what is needed, for progress in their business. There are hundreds who, from neglect to form the habit when young, would not read *Von Thaer's Principles of Agriculture,* one of the best books extant, and which any cultivated farmer would sooner have, than to have a fifty dollar note, if he could not get it otherwise—there are, we say, hundreds *within our knowledge,* who would not read it, if you were to put it in their hands, and who would sooner draw a silver butter ladle that he could buy for five dollars, than to draw the best agricultural library that ever was collected—it's in vain to offer to such men the alternative of taking *knowledge* or taking *money*—they will hug *ignorance* fast to their bosoms and put the money in their pockets. The Burlington Society has set a noble example in saying—As the reward for excellence, we offer you the means of learning how you may still further excel—we won't encourage the sordid love of mere money—if you can't be stimulated by a thirst for knowledge, which is another word for power and virtue, then we have nothing else to offer you.

All honor to those who were instrumental in this reform, though we doubt if it will be *popular!* and without that, what will go down in these days? *with* it, what will not—even piracy!

FIRST BIENNIAL REPORT OF THE GEOLOGY OF ALABAMA.

BY M. TUORNEY,

Geologist of the State, Professor of Geology, etc. in the University of Alabama.

We are much indebted to Governor Collier for a copy of this Report. The following letter, which accompanied it, and which we take leave to publish, will give some idea of the character of the work, and of the resources it indicates; and so far mitigates the regret we feel at not having had a moment at command to examine the work to which it refers.

We owe acknowledgments also to some friend for a copy of the Fourth Annual Report of the Board of Agriculture of Ohio, and an invitation to attend their next Fair, which we have some hope of being able to do.

EXECUTIVE CHAMBER, TUSCALOOSA, *June* 10, 1850.

J. S. SKINNER, ESQ.

SIR—I have sent to "The Plough, the Loom, and the Anvil," a copy of the "First Biennial Report on the Geology of Alabama, by M. Tuorney, Geologist to the State, &c.," of which I beg your acceptance. This report states the result of mere partial explorations, made at such times as the geologist could be relieved from the duties of his chair in our University; but is intended to be followed by other examinations, until the survey of the State is completed.

Quite enough is developed to show that Alabama presents a most interesting field for the geologist, and is unsurpassed in the variety and richness of her natural resources. Of course I except California, whose untold treasures of gold will certainly enrich a few, while the masses who seek it, are destined to combat with unrelenting poverty, and be sufferers in morals, even to their children's children. Such, I predict with confidence, will be the result. I remember no exception to such adventures in the history of the world.

Alabama, you will observe, contains an abundance of coal, iron, and lime, and beds of marble, white, black, and variegated, have been discovered in different localities, altogether superior to the best qualities found south of New England. These may all be made available by labour and capital, without the aid of protective duties. In this I think you will agree with me, when I state that labour, whether slave or free, can be procured in this State for thirty-three per cent. less than in Pennsylvania, and provisions are much cheaper. Notwithstanding the tariff of 1846, of which iron-masters in the Middle States complain so much, bar iron in the interior of Alabama retails at six and

eight cents, yielding a greater profit to our manufacturers, than cotton at twelve cents. Iron ore, coal, and lime, with an abundance of wood and water-power, are found contiguous to each other, and may be purchased from the United States at $1 25 per acre.

Cannot northern capitalists be induced to enter this inviting field for enterprise, and thus aid in advancing the prosperity of a country, which has contributed so much to build up their overgrown fortunes? I speak advisedly when I say that our laws as administered, afford as prompt and efficient protection to persons and property, as those of Pennsylvania and New York, while we are free of apprehensions of violence from mobs. I would not speak invidiously, but a more elevated morality or refined society is not found elsewhere. There can be no well grounded objection to investing capital in Alabama, upon the hypothesis of the instability of Southern institutions, or of the versatile character of her population. The exciting discussions of the last fifteen years have discovered to the South her boundless resources, and consequent power; and if true to her interest, her progress will be onward. She will practically renounce the pupilage and dependence, to which she has so long submitted with cheerfulness and childlike obedience. But she has no wish to place herself in an antagonistic position to the North. She is devotedly attached to the Union, and would only put it in peril to escape a greater evil than dissolution itself. We all hope that such an alternative may never be presented.

May I beg of you to notice Professor T.'s report, and publish such extracts from it as you may deem most interesting?

I have the honour to be, with great respect, your most obt. servt.,

H. W. COLLIER.

For the present we can only refer the Governor to our remarks on some passages in Governor Hammond's address, as published in our June number; and to the letter in this number, from a Friend of the Union in the North to a Friend of the Union in the South—with the full assurance it will receive as well from him, as from the gentleman to whom it is addressed—Gen. J. H.—a fair and candid examination.

THE PRICES OF LEADING AMERICAN AGRICULTURAL STAPLES.

As we can't quote from every market, we don't see that we could select a better one than the great New York market—the Liverpool of the United States.

We have asked for the verdict of the jury of readers, whether the space occupied for this subject should be so appropriated. One respectable juryman says yes, and that, so far, is the only voice we have heard. While we hold the case still under advisement, we give the following:—If any of our patrons desire to have other articles added, it would be difficult to suggest any that we cannot find in the same comprehensive and reliable authority—the New York Dry Goods Reporter.

WHOLESALE PRICES.

Duties payable in cash. Goods stored to be sold at public auction at the end of one year. The ton in all cases to be 2240 lbs.

COAL.—Duty 30 per cent. ad. val.			
Liverpool Orrel	per chaldron.	7 50	*a* — —
Newcastle, Coarse		6 75	*a* 6 87½
Scotch		5 50	*a* — —
Sidney and Pictou		5 50	*a* — —
Anthracite	per 2000 lb.	5 50	*a* — —
COCOA—Duty 10 per cent. ad val.			
Maracaibo		—	*a* —
Para		5⅝	*a* 5¾
St. Domingo		5¼	*a* 5½
COPPER—Duty, Bolts and Braziers', 20; Pig, Bar, and Old, 5 per cent. ad val.			
Sheathing, free.			
Sheathing, New		— 21½	*a* — —
Sheathing, Old		— 18	*a* — 18¼
Sheathing, Yellow		— 17½	*a* — 18
Pig, Peruvian		— 17½	*a* — 18
Bolts		— 24	*a* — 25

COTTON—	Atlantic ports.	Gulf ports.
Inferior	none	none
Ordinary low to good	11¾ a 12¼	11¾ *a* 12¼

COTTON—	Atlantic ports.		Gulf ports.
Middling low to good	12⅜ a 12¾		12⅜ *a* 13
Middling fair to fair	12⅞ a 13¼		13¼ *a* 13¾
Fully fair to good fair	13½ a 13¾		14¼ *a* —
Good and fine	none.		none.
FLOUR, MEAL, &c.—Duty 20 per cent. ad val.			
No. 2, Superfine		per bbl.	4 75 *a* 5 00
State, common brands			5 50 *a*
State, straight brands			5 62½ *a* — —
State, favorite brands			5 75 *a* 5 81¼
Ohio and Indiana, mixed brands			5 75 *a* 5 81¼
Michigan, mixed brands			5 75 *a* 5 81¼
Michigan and Ohio, straight do.			5 81¼ *a* 5 87½
Michigan, favorite brands			5 87 *a* 5 93¾
Michigan, fancy brands			5 91 *a* 6 00
Genesee, pure			6 21½ *a* 6 25
Ohio, fancy brands			6 21½ *a* 6 25
Genesee, fancy brands			6 31 *a* 6 43¾
Ohio, extra brands			6 37½ *a* 6 50
Genesee, extra brands			6 50 *a* 7 00
Canada . . . (in bond)			5 12½ *a* 5 18¾
Brandywine			5 75 *a* 5 81
Georgetown			5 75 *a* 5 87½
Alexandria			5 75 *a* 5 81
Baltimore, Howard street			5 75 *a* 5 81
Richmond, Country			— — *a* —
Petersburg City			5 75 *a* 5 81
Fredericksburg			5 85 *a* —
Rye Flour			2 94 *a* 3 12½
Corn Meal, Jersey			2 94 *a* 3 —
Do. Brandywine			3 25 *a* — —
Do. do.		punch.	15 00 *a* — —
FEATHERS.—Duty 26 per cent. ad val.			
Live, American		per lb.	—33 *a* — 35
GRAIN.—Duty 20 per cent. ad val.			
Wheat, White Genesee		per bush.	— — *a* 1 50
Wheat, Canada, (in bond)			1 25 *a* 1 30
Wheat, Ohio			1 15 *a* 1 25
Wheat, Red and Mixed W.			1 00 *a* 1 18
Wheat, Southern			1 20 *a* 1 35
Rye, Northern			— 62 *a* — —
Corn, round Yellow			— 65 *a* — 66
Corn, round White			— 63 *a* — 63¼
Corn, Southern White			— — *a* — —
Corn, Southern Yellow			— 64 *a* — 65
Corn, Western mixed			— 63 *a* — 64
Barley, Western			— — *a* — 66
Oats, Northern			— 47 *a* — 48
Oats, Jersey			— 45 *a* — 46
Oats, Southern			— 43 *a* — —
Peas, Black Eyed		per bush.	2 — *a* — —
White Peas			2 65 *a* — 70
" Beans, Southern			1 25 *a* 1 75
" " Northern			1 44 *a* 1 75
Canadian Peas			— 60 *a* — 65

HEMP.—Duty, Russia and Italian, 30 per cent. ad val.
Manilla, Jute and Sisal, 25 per cent.

	N. York.	Boston.	N. Orleans.	St. Louis
Amer. Dew-rotted	$115 *a* 125	$115 *a* 130	$95 *a* 102	$80 *a* 92
" Hackled	160 *a* 190	150 *a* 170	—	—
" Dressed	—	180 *a* 190	—	—
Manilla	9c	9¼ *a* 9½	—	—
Russia	210 *a* 215	207 *a* 210	—	—
Jute	75 *a* —	—	—	—
Sisal	9	—	—	—
Italian	195 *a* 200	—	—	—

HAY.—Duty 20 per cent. ad val.			
North River, in bales, per 100 lbs.		— 60 *a* — 65	
HONEY.—Duty 30 per cent. ad val.			
Cuba	per gall.	— — *a* — 54	
HOPS.—Duty 20 per cent. ad val.			
1849	per lb.	— 13 *a* — 17	
IRON.—Duty 30 per cent. ad val.			
Pig, Scotch, per ton		22 — *a* 23 50	
Bar, English refined		55 — *a* 57 50	
do do common		40 — *a* 42 50	
Sheets do		— 3¼ *a* — —	
Swedish		87 50 *a* 90 —	
English Hoop		4 — *a* 5 —	
PROVISIONS.—Duty, Cheese 30 per cent.; all others, 20 per cent. ad val.			
Beef, Mess, Co. and City	per bbl.	8 50 *a* 10 50	
Beef, Prime, Co. and City		5 50 *a* 6 87½	
Beef, Prime Mess	per trce.	17 — *a* 20 —	
Pork, Mess, Ohio, new	per bbl.	10 62½ *a* 10 69	
Pork, Prime, Ohio, new		8 68¾ *a* 8 75	
Pork, Prime, Mess		10 00 *a* 10 25	
Lard, Ohio, Prime, in bbls.	per bbl.	— 6¾ *a* — —	
Hams, Pickled		— 6¼ *a* — 7¼	
Hams, Smoked		— 6½ *a* — 10½	
Shoulders, Pickled		— 4 *a* — 4½	
Shoulders, Smoked		— 4½ *a* — 6	
Beef Hams, in Pickle	per bbl.	14 50 *a* — —	
Beef, Smoked	per lb.	— 9¼ *a* — 9½	
Butter, State, inferior		— 7 *a* — 10	
Butter, State, fair to good		— 13 *a* — 17	
Butter, State, prime and choice		— 18 *a* — 24	
Butter, Ohio		— 10 *a* — 14	
Cheese		— 5 *a* — 7	
SEEDS.—Duty, Clover and Timothy Free; Flax Seed 20 per cent. ad val.			
Clover	per lb.	— 6 *a* — 6½	
Timothy	per tce.	14 — *a* 16 —	
Flax, Rough, in bulk	per bush.	1 50 *a* 1 60	
TOBACCO.—Duty, Leaf and Unmanufactured, 30; Manufactured, 40 per cent. ad val.			
We quote:			
Virginia	per lb.	— 4½ *a* — 9	
Kentucky		— 5 *a* — 9	
St. Domingo		— — *a* — —	
Cuba		— 17 *a* — 21	
Yara		— 35 *a* — 45	
Havana, Fillers and Wrappers		— 18 *a* — 75	
Florida Wrappers		— 15 *a* — 60	
Connecticut Seed Leaf		— 16 *a* — 20	
Pennsylvania Seed Leaf		— 10 *a* — 20	
Manufactured, Nos. 1, 5, and 8		— 17 *a* — 22	
Manufactured, Middling, do.		— 15 *a* — 16	
Manufactured, Common, do.		— 10 *a* — 12	
Manufactured, 32s		— 12 *a* — 20	
Manufactured Ladies' Twist		— 15 *a* — 20	
Manufactured Cavendish		— 18 *a* — 40	
Manufactured, medium		— 15 *a* — 17	
Manufactured, common		— 12 *a* — 14	

"The Wool Grower" for June says, if Farmers can get 40 cents per lb. for heavy fleeces, even of a pretty good grade, we say sell by all means. They will not do better if they hold it till next autumn.

A lot of 3000 pounds, one fourth to full blood, is reported, in a late "Baltimore American," as having been sold at 36 cents.

For "The Plough, Loom, and Anvil."

CALENDER OF OPERATIONS.

Whe! Summer is upon us with its 94° of temperature. Vegetables of every description are progressing rapidly to maturity. Those who were particular in sowing the earliest kinds of peas, such as Prince Albert and extra early, have them now in abundance. The early six weeks beets will soon be fit for the table, and before another month, we will be luxuriating upon tomatoes. As soon as the strawberries have matured their crop, trim off all the runners, give the beds a good manuring, and dig between the rows full spade deep, the plants will soon tell of the benefits derived therefrom: allow no runners to be made during the remainder of the season, except on those sorts that young plants are desired for new plantations.

Plant more sugar corn for a late table crop, snap short beans, also late beets, but not later than the 10th of July; prepare ground for celery, late cabbage, savoys, also red cabbage for pickling; sow cucumbers for the same purpose if not already done, water early celery plants during dry weather; destroy weeds of every description is advice always in time.

Fruit Garden.—Bud plum trees in the early part of the month before the bark hardens, if delayed till the end of the month they will be too late; bud cherries and pears in August, and apples and peaches in September. Every farmer should endeavour to propagate the pear on the quince stock; these stocks can be purchased from nurserymen for a mere trifle, and pears will generally produce fruit in two or three years after the operation: it has been supposed the pear is not so long-lived on this stock as upon the natural stock, but that is a mere supposition. We know trees thirty years old, and they were, when we last saw them, in perfect health and full of fruit; the buds of the pear are inserted on the quince close to the ground, and when removed the whole of the stem of the quince is planted underground, guarding it from the borer, which frequently destroys it in some soils.

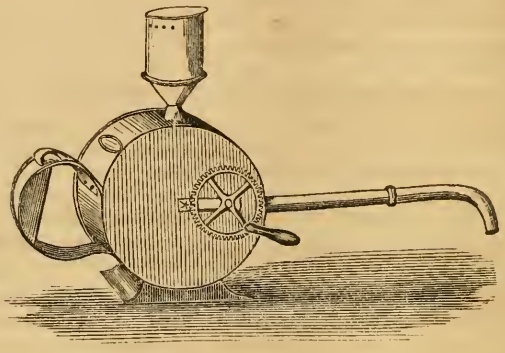
Keep a good look-out for catterpillars; destroy them before sunrise or about noon, when they are all in their nests. Pole shears are indispensible implements with the orchardist, and the very article to use for this purpose; they are also excellent for collecting fruit from the extremity of the branches, by suspending a small basket under the shears, which will displace the fruit from the tree into the basket. We were faithful last year in destroying thousands of caterpillars, and this season as yet we have seen none.

The Farm.—Haytime and harvest, is proverbially a busy season with every farmer, and this promise us an abundant reward for our toils. Hay is a heavy crop, and wheat in this section will be ditto. One word, never put *dock-seed* into your manure heap or *hay-mow.* We were nearly unnerved the other day, by one of our neighbours housing it with his hay. Prepare for as much Swede Turnips as you can manure. We sow after the hay crop is from the ground; plough thoroughly, harrow well, furrow up your ground twenty-seven inches from ridge to ridge, distribute the manure in the furrows, cover it up at once, and follow with your turnip seed on the top of the ridge. We run a light roller on the top of our furrows, and then sow with one of Pennock's seed drills; the work is done in the twinkling of an eye. We also drill in our common turnips, preparing the ground well and manuring freely; this crop with us succeeds oats. We last season had a very heavy produce, greatly to the benefit of our stock and manure heap, but how far we drag behind, or at least how far we are in the rear of what we might have been, we appear weak when we are actually strong.

The largest and most influential body of men are the Agriculturists, the "tillers of the soil." It is truly cheering to see the laudable effort that is everywhere making at the present day, to raise the intellectual and social position of the farmer. We hear of Agricultural Bureaus, Colleges and Model Schools, professing to have for their object this desirable end. Agriculture is in fact taking a very high position, and we predict the time is not far distant, when we may see the tillers of the land, a body of men in no respect inferior (in high intellectual acquirements) to the members in either of the faculties of Divinity, Law, or Physic; and to bring about such a consummation, there ought to be a standard, by which to judge of the qualifications of the Farmer. In the faculties above alluded to, an ordeal is established, where the candidate must pass before he is considered qualified to fill the office for which he aspires. I can see no valid objection for not following such examples, in the case of Farmers. There is ample room for carrying out such a plan, the materials are ready at hand, it only requires the impress of a master mind to model them into an institution.

BROWN'S PATENT FUMIGATOR.

Price ten shillings.



A portable instrument, for fumigating greenhouses, stoves, and frames, or shrubs and flowers, in the open air, without injuring the most delicate plant: delivering the smoke cool, in a dense mass, and effecting a great saving of tobacco. Manufactured and supplied to the trade, by Messrs. Barber and Groom, London; and may be had of all ironmongers, seedsmen, and florists.

We had this engraved because it occurred to us that it might be useful, not only for the purposes indicated, but for smoking young poultry, to cure them of the gapes, with the fumes of tobacco; a process which we have often seen, and, when a little shaver, assisted to make successful. The revolving of the wheel, like that of a wheat fan, serves to keep burning the substance ignited in the hopper, by creating a vacuum below, as the paddles of the wheat fan creates a current of air. It cools the smoke, too, at the same time that it expels it from the nozzle of the fumigator.

N. A. C. will please send us more of the perennial pepper seed, and not put it loose in the letter, as in that case it is liable to be lost, before or at the time of opening it. He will have received, we hope, the seed he wrote for. We will gladly send to any friend, ½ an ounce of almost any kind of seed, with which they may desire to make experiment.

☞ We have reason to hope that when the debate in Congress on slavery, at which the public is becoming indignant, shall have been decided, if ever, the true *patriots*, of both *parties*, will combine again to do something for the industry of *our own country*.

Painter's, Gilder's, and Varnisher's Companion. This is a very neat little book, compiled with great care, and written in a concise, but clear and simple style. It contains descriptions of the processes, together with receipts for producing every kind of colour, used in the ordinary practice of the Painter, selected from the very best authorities, with the latest improvements and inventions, showing the present perfected state of the art. Great accuracy is manifest in the enumeration of the ingredients, and clear instruction given for their various application. Also, the principal operations connected with *Gilding and Varnishing* are clearly explained. To persons of either of these pursuits, it is an invaluable work, from which a fund of practical knowledge may be obtained, which will make every skillful, intelligent workman, master of his calling. It is a small book, which all persons of this class *may* and *should* own. Published by H. C. Baird, only successor to E. L. Carey, Fifth and Market streets, Philadelphia.

The Dyer and Colour Maker's Companion. This little book, from the same enterprising publisher, contains upwards of two hundred receipts for making colours of every distinction, and shade, for dying. Also the principles of the scouring process, and directions for preparing, washing, and finishing, the goods. It is a work which will enable every dyer to be his own teacher, and become independent in his art. The lawyer might as well attempt to plead his case, without referring to any book, as the dyer to become an adept without a work of this kind.

The Plough, the Loom, and the Anvil.

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THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

HOW THE TARIFF POLICY AFFECTS LABOUR.

As the cost of manufactures consists in a great measure in the labour bestowed on them, every one desirous of arriving at the truth on the great question—how far a nation should protect its own labour against that of foreign countries,—will naturally desire to understand the question here discussed. In the following chapter the author of these letters has undertaken to point out the bearing of the tariff policy of a country on the various classes and employments of life; and, among others, on those whose personal labour supplies them with the means of subsistence. Can any class be more interested in thoroughly comprehending the subject, than the cultivators of the soil? for when they do not themselves perform the labour, they depend on those who do, and if they do not already perceive, it is high time they should, that labourers make good or worthless customers for the tillers of the soil, according as the return to labour is good or bad. But we are almost weary of attempts to reconcile farmers and planters to discussions like these, for careless or superficial indeed must be the reader who fails to see, that of all things, that which most concerns every producer, is to understand, and as far as he can, to improve beneficially, the laws that regulate demand and that bear upon the means of supply. He must have but a dull perception of his position and interests who needs to be repeatedly persuaded to study such subjects carefully for himself, or, would he rather be told again how long is the gestation of a cow? or how to cure a hog of the quinsy?—*Edit. P. L. & A.*

CHAPTER FIFTEENTH.

HOW PROTECTION AFFECTS THE LABOURER.

Whenever there is in market a surplus of any commodity, whether that surplus be the effect of natural or artificial causes, the price of the whole tends to fall to that at which the last portion can be sold—and whenever there is a deficiency, the price of the whole tends to rise to that point at which the last portion that is needed can be obtained. Labour is a commodity, the owners of which seek to exchange with other persons, giving it in the form of sugar or cotton, and receiving it in the form of cloth and iron, and, being such, it is subject to the same laws as all other commodities. So long as there shall be a surplus of it anywhere, the price everywhere tends to fall to the lowest level. With the diminution of the surplus anywhere, the price everywhere will tend to rise to a level with the highest.

Mere labour, unaided by machinery, can effect little. The man who has no axe cannot fell a tree, nor can he who has no spade dig the earth. The man who has no reaping-hook must pull up the grain, and he who has no horse or cart must transport his load upon his back. Such is the condition of the people of India, and such, nearly, is that of the people of Ireland. Labour is consequently unproductive, and its price is low.

To render labour productive, men require machinery, which is of three kinds, to wit: First, Machinery of *production*, consisting of lands that are cleared, drained, and otherwise fitted for the work of cultivation. Second, Machinery of *conversion*, as saw-mills, which convert logs into planks and boards; grist-mills, which convert wheat into flour; cotton and woollen-mills, which convert wool into cloth; and furnaces, which convert lime, fuel, and ore into iron. Third, Machinery of *transportation*, by aid of which the

man who raises food is enabled to place it where he can exchange it with the one who makes cloth or iron.

The two latter descriptions make no addition to the quantity of food or wool that is to be consumed. The wheat or cotton that goes into the mill comes out flour or cloth. The barrel of flour that goes into the ship comes out a barrel of flour, neither more nor less, and it will feed no more people when it comes out than when it went in.

The bushel of wheat that is sown comes out of the earth six, eight, or ten bushels, and the bushel of potatoes comes out twenty or thirty bushels. They have been placed in the machine of production, while the others have been placed in the machines of conversion or transportation.

The more labour that can be applied to the machine of production, the larger will be the supply of food and wool, and the larger will be the quantity of both that will be deemed the equivalent of a day's labour.

The nearer the place of conversion can be brought to the place of production, the less will be the necessity for transportation, the more steady will be the demand for labour throughout the year, the larger will be the quantity that may be given to the work of production, the better will the labourer be fed and clothed, and the more rapid will be the accumulation of wealth in the form of machinery to be used in the further increase of production:

Wealth tends to grow more rapidly than population, because better soils are brought into cultivation; and it does grow more rapidly whenever people abandon swords and muskets and take to spades and ploughs. Every increase in the ratio of wealth to population is attended with an increase in the power of the labourer as compared with that of landed or other capital. We all see that when ships are more abundant than passengers, the price of passage is low—and that when, on the contrary, passengers are more abundant than ships, the price is high. When ploughs and horses are more plenty than ploughmen, the latter fix the wages, but when ploughmen are more abundant than ploughs, the owners of the latter determine the distribution of the product of labour. When wealth increases rapidly, new soils are brought into cultivation, and more ploughmen are wanted. The demand for ploughs produces a demand for more men to mine coal and smelt iron ore, and the iron-master becomes a competitor for the employment of the labourer, who obtains a larger proportion of the constantly increasing return to labour. He wants clothes in greater abundance, and the manufacturer becomes a competitor with the iron-master and the farmer for his services. His proportion is again increased, and he wants sugar, and tea, and coffee, and now the ship-master competes with the manufacturer, the iron-master and the farmer: and thus with the growth of population and wealth there is produced a constantly increasing demand for labour; and its increased productiveness, and the consequently increased facility of accumulating wealth are followed necessarily and certainly by an increase of the labourer's proportion. His wages rise, and the *proportion* of the capitalist falls, yet now the latter accumulates fortune more rapidly than ever, and thus his interest and that of the labourer are in perfect harmony with each other. If we desire evidence of this, it is shown in the constantly increasing amount of the rental of England, derived from the appropriation of a constantly decreasing proportion of the product of the land: and in the enormous amount of railroad tolls compared with those of the turnpike: yet the railroad transports the farmer's wheat to market, and brings back sugar and coffee, taking not one-fourth as large a *proportion* for doing the business as was claimed by the owner of the wagon and horses, and him of the turnpike. The labourer's product is increased, and the proportion that goes to the capitalist is decreased. The power of the first over the product of his labour has grown, while that of the latter has diminished.

Look where we may, throughout this country, we shall find that where machinery of transportation is most needed, the quantity of labour that can be given to production is least, and the return to labour—or wages of the labourer in food, clothing, and other of the necessaries and comforts of life—is least: and that where transportation is least needed, the quantity of labour that can be given to production is greatest, and wages are highest: or in other words, that the nearer the consumer and the producer can be brought together the larger is the return to labour.

For forty years past the cultivation of cotton in India has been gradually receding from the lower lands towards the hills, producing a constantly increasing necessity for the means of transportation, and a constant diminution in the quantity of labour that could be applied to production. With each such step labour has been becoming more and more surplus, and the reward of labour has been steadily diminishing.

During a large portion of this period, such has been the case with Southern labour. It has been gradually receding from the lower lands of South Carolina and Georgia, producing a constant increase in the necessity for transportation, while the commodities to be transported would command in return a constantly decreasing measure of cloth, iron, and other of the necessaries of life. This tendency has been in some degree arrested by the large consumption at home, and by the power of applying labour to the culture of sugar; but were we now to change our revenue system, establishing perfect freedom of trade, the home manufacture of cotton and the home production of sugar must cease, and cotton wool would then fall to three cents per pound, for the planter would then be reduced to that as the only thing he could cultivate for sale. Labour would become more and more surplus, with a constant diminution of the power of the labourer to obtain either cloth or iron.

So has it been, and so must it continue to be, with the sugar and coffee planters. Their products yield them a constantly diminishing quantity of either cloth or iron, with constantly increasing difficulty of obtaining clothing or machinery in exchange for labour.

In New England, wages—*i. e.* the power to obtain food, clothing, and iron in exchange for labour—are high, but they tend to rise with every increase in the productiveness of Southern and Western labour, and so will they continue to do as Southern and Western men become manufacturers, because the latter will then have more to offer in exchange for labour. With any diminution in the productiveness of labour South or West, the wages of New England must fall, because there will then be less to offer them in exchange.

In England, the power to obtain food, clothing, or iron, for labour, is small, and it tends to diminish with every increase in the proportion of the population dependent upon transportation, and every diminution in the proportion that applies itself to production, because with each such step there is a necessity for greater exertion to underwork and supplant the Hindoo, whose annual wages even now are but six dollars, out of which he finds himself in food and clothing. With every step downwards, labour is more and more becoming surplus, as is seen from the growing anxiety to expel population, at almost any present sacrifice. Why it is so we may now inquire.

The great object of England is commerce.

Commerce among men tends to produce equality of condition, moral and physical. Whether it shall tend to raise or to depress the standard of condition, must depend upon the character of those with whom it is necessary that it should be maintained. The man who is compelled to associate with the idle, the dissolute, and the drunken, is likely to sink to the level of his companions.

So is it with labour. The necessity for depending on commerce with men

among whom the standard is low, tends to sink the labourer to the level of the lowest. Place half a dozen men on an island, two of whom are industrious and raise food, leaving it to the others, less disposed to work, to provide meat, fish, clothing, and shelter, and the industrious will be *compelled* to exchange with the idle. Clothing and shelter are as necessary as bread, and those who play will therefore profit by the labours of those who work. The latter, finding such to be the result, will cease to work with spirit, and by degrees all the members of the little community will become equally idle. Here lies the error of *communism* and *socialism*. They seek to compel union, and to force men to exchange with each other, the necessary effect of which is to sink the whole body to the level of those who are at the bottom.

So, too, is it with nations. The industrious community that raises food and is *dependent* on the idle one that makes iron must give much of the one for little of the other. The peaceful community that raises cotton and is *dependent* on the warlike one that raises silk, must give much cotton for little silk. Dependence on others for articles of necessity thus makes a community of goods, and the sober and industrious must help to support the idle and the dissolute—nations as well as individuals.

So long as this state of dependence exists, the condition of each is determined by that of the other. If the idle become more idle, and the dissolute more dissolute, those who still continue to work must steadily give more labour for less labour, and their condition must deteriorate unless they adopt such measures as shall gradually diminish and finally terminate their dependence on such companions.

The policy of England has tended to produce *communism* among nations. She has rendered herself dependent upon other communities for supplies of the articles of prime necessity, food and clothing, obtaining her rice from the wretched Hindoo, her corn from the Russian serf, and her wool from the Australian convict, neglecting her own rich soils that wait but the application of labour to become productive.

The necessary consequence of this is a tendency downwards in the condition of her people, and as it is with those of England that those of this country are invited to compete, it may not be amiss to show what is the condition to which they are now reduced by competition with the low-priced labour of Russia and of India.

The *Spectator*, a free-trade journal, informs us* that "the condition of the labouring classes engaged in agriculture, long an opprobrium to our advancement in civilization, has not improved; while wages exhibit *a universal tendency to decline beneath the lowest level of recent times.*"

The *Morning Chronicle* has recently given a series of letters from a correspondent specially deputed to inquire into the condition of the labouring classes in the agricultural counties, and by him we are informed that in Buckinghamshire and Oxfordshire the average wages of the year will not exceed 9/=$2·16 per week, while in Berks and Wiltshire they will not exceed 7/6=$1·79, and with this it is to be borne in mind that "when a poor wretch is prevented for a day, or even half a day, from working, his wages are stopped for the time." The wife sometimes works in the fields, and adds three shillings a week to the fund out of which these unfortunate people are to be subsisted, yet this gain is not without a drawback, as will be seen by those who may read the following account of the condition of the English agricultural labourer, in the middle of the nineteenth century, which, long as it is, will be found interesting:—

* November 12, 1849.

"When a married woman goes to the fields to work, she must leave her children at home. In many cases they are too young to be left by themselves, when they are generally left in charge of a young girl hired for the purpose. The sum paid to this vicarious mother, who is generally herself a mere child, is from 8*d.* to 1*s.* per week, in addition to which she is fed and lodged in the house. This is nearly equivalent to an addition of two more members to the family. If, therefore, the mother works in the fields for weekly wages equal to the maintenance of three children for the week, it is, in the first place, in many cases, at the cost of having two additional mouths to feed. But this is far from being all the disadvantages attending out-door labour by the mother. One of the worst features attending the system is the cheerlessness with which it invests the poor man's house. On returning from work, instead of finding his house in order and a meal comfortably prepared for him, his wife accompanies him home, or perhaps arrives after him, when all has to be done in his presence which should have been done for his reception. The result is, that home is made distasteful to him, and he hies to the nearest ale-house, where he soon spends the balance of his wife's earnings for the week, and also those of his children, if any of them have been at work. A great deal is lost also through the unthrifty habits of his wife. Her expertness at out-door labour has been acquired at the expense of an adequate knowledge of her in-door duties. She is an indifferent cook—a bad housewife in every respect. She is also in numerous instances lamentably deficient in knowledge of the most ordinary needle-work. All that she wants in these respects she might acquire, if she stayed more at home and was less in the fields. In addition to this, her children would have the benefit of being brought up under her own eye, instead of being, as they are, utterly neglected and left to themselves; for the party left in charge of them—and it is not always that any one is so—is generally herself a child, having no control whatever over them. It is under these circumstances that the seeds of future vice are plentifully sown. On the whole, as regards the system of married women working in the fields, I cannot, when the children are young, but look on the balance as being on the side of disadvantage. In that case I think it would be decidedly better for the poor man, having reference only to his physical comforts, that his wife stayed at home. And this is the position of many a labouring man. In many cases, when the family is large, some of the children are at work, adding their scanty wages of from 1*s.* 6*d.* to 2*s.* a week to the common fund. But I have known numerous cases of famllies of seven children, of which the eldest was not eight years old. Besides, when these are fit to work and earn wages of their own, his children soon become independent of him, and set up for themselves. This is in one way a relief to him, unless his family, while diminishing at one end, is increasing at the other. There can be no doubt but that a family is frequently aided by the earnings of the children, but in by far the greater number of cases the means of support are procured by the parents themselves. From what has been already said of the disadvantage to the whole family at which the wife bears her share in procuring them, it will be evident that the husband's earnings are, after all, the true test and standard of his own condition and that of those dependent upon him.

Moreover, in a very large proportion of cases, the wife remains at home, attending to duties more appropriate to her sex and position, in which case there is no other aid to be had, unless it be the trifling and fitful earnings of one or two of the children. We have seen that, in the counties in question, there are about 40,000 married couples, who, with their children, numbering about 120,000, depend exclusively upon agricultural labour for support. Of the 40,000 mothers, fully one-half stay at home, some being compelled to do so on account of the extreme youth of their children; and others, save when their families are somewhat advanced, preferring from calculation to do so, as being the best mode of turning their scanty means to good account. This may be taken as the case with half the married couples, who, with their families, will number about 100,000 individuals. So far, therefore, as these are concerned, the children, in about the same proportion of families, being too young to add any thing to the common stock, there is nothing else to adopt as the test of their condition and the standard of their comforts but the earnings of the husband. Let us inquire, therefore, into the condition of a family thus solely dependent upon such wages as the husband has, on the average, received during the past portion of the current year. I can best illustrate that condition by one of the numerous cases which came under my consideration in Wiltshire. The labourer in that case had had 8*s.* a week, but he was then only in receipt of 7*s.* He had seven children, the eldest of whom, a girl, was in her eighth year. Two of his children had been at a "dunce's school;" but they were not then attending it, simply because he could not afford the 4*d.* a week which had to be paid for their education. To ascertain how far he was really

incapable in this respect, I requested him to detail to me the economy of his household for a week, taking his earnings at 8*s*. The following is the substance of the conversation, discarding, for the reader's sake, the portions in which the names are given.

When are your wages paid?—On Saturday night, but often only once a fortnight.

What do you do with the money on receiving it?—I first lay by my rent, which is a shilling a week. I then go to the grocer's and lay in something for Sunday and the rest of the week. I buy a little tea, of which I get two ounces for 6*d*. Sugar is cheap, but I cannot afford it. We sometimes sweeten the tea with a little treacle, but generally drink it unsweetened.

Do you purchase any butcher meat?—Generally for a Sunday we buy a bit of bacon.

How much?—It is seldom that I can afford more than half a pound.

Half a pound among nine of you?—Yes; it is but a mere taste, but we have not even that the rest of the week. It costs me about 5*d*.

Do you buy your bread, or make it at home?—We buy it. We have not fire enough to make it at home, or it would be a great saving to us.

Do you buy a quantity at once, or a loaf when you need it?—We buy it as we need it.

Have you a garden attached to your cottage?—I have about fifteen poles, for which I pay 1½*d*. a pole. It is less than the eighth of an acre.

What do you raise from it?—We raise some potatoes and cabbages.

Do you raise a sufficient quantity of potatoes to serve you for the year?—No, not even if they were all sound.

In addition to the potatoes and the cabbages which you raise, how much bread do you require for your own support, and that of your wife and seven children for the week?—We require seven gallons of bread at least.

What is a gallon of bread?—It is a loaf which used to weigh 8 lbs. 11 oz., but which now seldom weighs above 8 lbs. Those who supply bread to the union seldom make it over 8 lbs.

What is the price of the gallon loaf?—Tenpence. It is cheaper than it was, but then there is not always so much of it. It is often of short weight.

Seven gallons of bread at 10*d*. a gallon would make 5*s*. 10*d*., would it not?—I believe it would make about that—you ought to know.

Do you always get seven gallons a week?—No, seldom more than six.

Then you spend 5*s*. in bread, and make up for the want of more by potatoes and cabbages?—Yes.

You have still some money left; what do you do with it?—It costs us something for washing. For soap and soda, and for needles and thread for mending, we pay about 5*d*. a week.

Do you buy fuel?—We get a cwt. of coal sometimes, which would cost us about 1*s*. or 1*s*. 1½*d*. if we took in any quantity and paid ready money. When we do neither it costs us about 1*s*. 4*d*. a cwt. If there is one poor man who can afford to buy it in any quantity for ready money, there are forty who cannot.

How long would a cwt. of coals serve you?—We make it last one way or another for two weeks.

Your fuel, therefore, will cost you about 8*d*. a week?—It will.

Is there any thing else you have?—We buy a little salt butter sometimes, which we can get from 6½*d*. to 10*d*. a pound. We are obliged, of course, to take the cheapest; "and really, sir, it is sometimes not hardly fit to grease a wagon with."

But your money is already all gone: how do you pay for your butter?—It is not always that we have it, and we can only have it by stinting ourselves in other things.

You have said nothing about your clothing: how do you procure that?—But for the high wages we get during the harvest time, we could not get it at all.

How long does the time last when you get high wages?—About ten weeks, and but for what we then get I do not know how we could get on at all.

From this recapitulation it must certainly appear a mystery to the reader how they get on as it is. The weekly expenditure, in our view, is as follows, the family being nine, and the weekly receipts 8*s*.:—

	s.	*d*.
Rent	1	0
Tea	0	6
Bacon	0	5
Bread	5	0
Soda, soap, &c.	0	5
Fuel	0	8
Total	8	0

The provision for clothing is in the extra wages paid at harvest time, while the family cannot be treated to the luxury of bad butter without sacrificing the tea, two ounces of which must serve for a week, the half pound of bacon, which affords but a "mere taste" on Sunday to each; some of the bread which is already but too scantily supplied; or a portion of their fuel, the absence of which renders their home still more cheerless and desolate. Sugar, too, is out of the question, without trenching upon items more absolutely necessary. Nor is there any reserved fund for medicines, too often required by a family of nine thus miserably circumstanced. What, in short, have we here? We have nine people subsisting for seven days upon 60 lbs. of bread—scarcely a pound a day for each, half a pound of bacon, and two ounces of tea, the rest being made up by a provision, too scanty in nine cases out of ten, of potatoes and cabbages raised in the garden. Could they descend much lower in the scale of wretchedness, especially when we couple with their stinted supply of the less nutritious kinds of food the miserable hovels in which it is taken by them, either shivering in the winter's frosts, or inhaling the pestilential odours engendered around them by the summer heats?

I could no longer express any surprise at 4*d.* a week being grudged for the education of two children.

This being the mode in which his weekly wages were expended, I asked the same individual to give me an account of his daily life, including his labour and fare. In reply to my questions on this point he answered, in substance, as follows:—

At what hour do you go to work?—At six in the morning, generally, in summer; but I have gone much earlier. In winter time work begins at a later hour.

Do you breakfast at home?—When I do not go out very early I generally do.

Of what does your breakfast consist?—Principally of bread, and sometimes a little tea. Sometimes, too, we have a few potatoes boiled.

When do you dine?—About twelve.

Of what does your dinner consist?—On the Monday my wife gets a little flour and makes a pudding, which, with a few potatoes, forms my dinner. Sometimes we have a pudding on other days, but generally our dinner is bread and potatoes, with now and then a little cabbage. When the family is not large, there may be a bit of bacon left that has not been used on Sunday, but that is never the case with us.

You return to work again?—I do, and when I come home at night may have a little tea again, with the bread which forms my supper. The tea is never strong with us, but at night it is very weak.

Do your children get tea?—We have not enough for that.

What is their drink?—Water; sometimes we get them a little milk.

What is your own drink?—Water.

Do you never drink beer?—Never, but when it is given me; I can't afford to buy it.

When your dinner consists of bread, potatoes, and water, have you nothing to season it or make it palatable?—Nothing but a little salt butter; and we can only afford that when the bread or potatoes happen not to be very good, or when we are ailing, and our stomachs are a little dainty.

When your bread or potatoes are bad, or your stomachs are dainty, you take as a relish the butter which you said was scarcely fit to grease a wagon with?—We have nothing better to take.

Suppose you had nothing but bread to eat, how much would you require to sustain you at work in the course of a day?—Two pounds at least.

And how much would one of your children require?—About the same. A child, although not at work, will eat as much as a man; children are always growing, and always ready to eat, and one does not like to refuse food to them when they want it. I would sooner go without myself than stint my children, if I could help it.

Then, at the rate of two pounds a day for each, you would require for all about 126 lbs. for the week?—I suppose about that.

And, as you only get about sixty pounds of bread a week, you have to rely on your potatoes and cabbages, your half pound of bacon, and two ounces of tea, to make up for the sixty-six pounds which you cannot get?—We have nothing else to rely on.

Have you enough of these to afford you as much nourishment as there would be in sixty-six pounds of bread?—Not nearly enough.

Is what you have stated your manner of living from week to week?—It is when I have work.

And when you have not work, how is it with you?—In the winter months we have sometimes scarcely a bit to put in our mouths.

Such is the substance of the statement, as regards his own and his family's circumstances, made to me by a labouring man in the receipt of the average rate of wages for the last nine months in Wiltshire. Comment is scarcely needed, the facts speaking but too plainly for themselves. Had the family been smaller, or the wages a little higher, instead of a "taste," they might have had a meal of bacon once a week. But even then it would be but once a week, potatoes and bread still constituting the staple of their diet, and even these not being had by them in sufficient quantity. Besides, even if they had it more frequently, bacon is not the most nourishing food in the shape of butcher meat; it is fat, and goes to fat. The little lean that is in it is almost destroyed by the process of curing. But it is greasy, and soon satisfies. "It fills us sooner than any other kind of meat," was the reply given to me when I asked why they preferred it to beef? But the fault is that it does not fill them; it satiates, without filling them. Bulk is required as well as nutriment in food. The stomach has a mechanical as well as a chemical action to perform. A man could not live on cheese, nor could he exist on pills having in them the concentrated essence of beef. They buy bacon because it goes a longer way than other meat—in truth, they buy it because it soon cloys them. Nor is it always that they have even a "taste" of it once a week. I have seen several families who had not tasted butcher meat of any kind for weeks at a time. When French and English workmen came together during the construction of some of the French railways, it was found that the Englishman could perform far more work than his French competitor. This was universally attributed to the superiority of his diet, it being supposed but reasonable on all hands to expect more work from the man who fed on beef and porter than from him whose fare was bread and grapes. But the fare of the man who is expected by his labour to develope, year after year, the agricultural wealth of England, is, in a large proportion of cases, little better than bread and water—the fare of the condemned cell! Contrast the condition of the English farm labourer with that of the farm labourer in Canada. In England he eats butcher-meat once a week, and not always that; in Canada he has as much of it as he wants once, at least, and frequently twice a day. Contrast his condition even with that of the slave in the Southern States of America. In Virginia, the great slave State, it is seldom that a day passes without the slave eating butcher-meat of some kind or other. In addition to this, when he is old and infirm, he has a claim on his master for support. But the English labourer, if he has a family to sustain, has not, even during the days of his strength, when he can do, and does work, the same nutritious diet as the slave; while, when he is disabled, or loses his work, he must starve, or, as the alternative, become a vagrant, or the recipient of a formal and organized charity. In the words of one of themselves, "it is not a living, sir—it is a mere being we get;" by which he intended to convey that their reward for their toil was their being barely enabled to exist.

It may be said that the case put is an extreme one. It is the case, however, of nearly one-half of those who are dependent upon labour in the fields. But it may be said that I have omitted to take into account some little privileges which the labourer has, and which, when he avails himself of them, tend to enhance his comforts. He may keep a pig, for instance, and his employer will sometimes find him straw for it, which, in process of time, will serve as manure for his little garden. This looks very well on paper, but that is chiefly all. In the four counties under consideration the number of labourers keeping pigs is about one in twelve. It is also a striking illustration of the condition of the labourers, that even such of them as do feed a pig seldom participate in the eating of it. Then we hear a great deal about the coal and clothing clubs, to which I shall hereafter more particularly advert, and the chief merit of which is that they tend to render life not pleasant, but barely tolerable to the poor."

The sleeping accommodations are thus described:—

"These are above, and are gained by means of a few greasy and rickety steps, which lead through a species of hatchway in the ceiling. Yes, there is but one room, and yet we counted nine in the family! And such a room! The small window in the roof admits just light enough to enable you to discern its character and dimensions. The rafters, which are all exposed, spring from the very floor, so that it is only in the very centre of the apartment that you have any chance of standing erect. The thatch oozes through the wood-work which supports it, the whole being begrimed with smoke and dust, and replete with vermin. There are no cobwebs, for the spider only spreads his net where flies are likely to be caught. You look in vain for a bedstead; there is none in the room. But there are their beds, lying side by side on the floor, almost in contact

with each other, and occupying nearly the whole length of the apartment. The beds are large sacks, filled with the chaff of oats, which the labourer sometimes gets and at others purchases from his employer. The chaff of wheat and barley is used on the farm for other purposes. The bed next the hatchway is that of the father and mother, with whom sleeps the infant, born but a few months ago in this very room. In the other beds sleep the children, the boys and girls together. The eldest girl is in her twelfth year, the eldest boy having nearly completed his eleventh; and they are likely to remain for years yet in the circumstances in which we now find them. With the exception of the youngest children, the family retire to rest about the same hour, generally undressing below, and then ascending and crawling over each other to their respective resting-places for the night. There are two blankets on the bed occupied by the parents, the others being covered with a very heterogeneous assemblage of materials. It not unfrequently happens that the clothes worn by the parents in the day time form the chief part of the covering of the children by night. Such is the dormitory in which, lying side by side, the nine whom we have just left below at their wretched meal will pass the night. The sole ventilation is through the small aperture occupied by what is termed, by courtesy, a window. In other words, there is scarcely any ventilation at all. What a den in the hour of sickness or death! What a den, indeed, at any time! And yet when the sable goddess stretches forth her leaden sceptre over the soft downy couch in Mayfair, such are the circumstances in which, in our rural parishes, she leaves a portion of her slumbering domain.

Let it not be said that this picture is overdrawn, or that it is a concentration, for effect, into one point, of effects spread in reality over a large surface. As a type of the extreme of domiciliary wretchedness in the rural districts, it is underdrawn. The cottage in question has two rooms. Some have only one, with as great a number of inmates to occupy it. Some of them, again, have three or four rooms, with a family occupying each room; the families so circumstanced amounting each, in some cases, to nine or ten individuals. In some cottages, too, a lodger is accommodated, who occupies the same apartment as the family. Such, fortunately, is not the condition of all the labourers in the agricultural districts; but it is the condition of a very great number of Englishmen—not in the backwoods of a remote settlement, but in the heart of Anglo-Saxon civilization, in the year of grace 1849."

Bad, however, as is all this, it is likely to be worse. Everywhere, notices are being given of a reduction of wages, and diminution in the number of persons to be employed. There is scarcely, says the writer, a district in any of these counties "where the work of reducing wages has not already commenced." In one of them, as early as last June, there was a reduction from 8*s*. to 7*s*., and "apprehensions are everywhere entertained that they will be reduced to 6*s*. = $1·44." "Is it any wonder," he adds, "that, with such a prospect before them, the agricultural labourers should brood over their circumstances with the ominous sullenness of despair? What is that prospect? The winter is approaching—the season when most is required by us all to administer to our comforts. They are entering upon that season with here 8*s*., there 6*s*., and there again but 5*s*. a week for the support of their families. How far will these pitiful portions go in households of five, six, seven, eight, nine, or ten individuals? We cannot, in estimating a labourer's comforts at any given time, apply to them the test of his average wages. It is his wages for the time being that decide the measure of his condition. Had he at any time more than was necessary to carry him and his family up to the line of comfort, he might lay by the surplus for adverse times. But he never has what secures him perfect comfort, and is always more than tempted to spend all he gets. He therefore commences this winter, as he does every winter, without any reserve-fund to fall back upon; and the fact is appalling that, in this month of October, thousands of families in the very heart of England have no better prospect before them than that of living on 8*s*., 6*s*., and even 5*s*. a week, in their cold, damp, cheerless, and unhealthy homes."

The Canadian farmer is invited to contend in the market of England with the serf of Russia for the privilege of supplying with food men to whom a

morsel of bacon on a Sunday is a luxury, when by the simple process of annexation and protection he could bring to his side the same men and convert them into large and valuable customers. The planter is invited to contend in the market of England for the privilege of clothing men who want means to buy bread, when by an exercise of his will he could bring to his side, annually, millions of the same men, each of whom would then require twenty pounds a year, two millions consuming half as much as was consumed in 1847 by almost thirty millions of the people of England and Wales.

The system of England demands that with such people as these we shall establish a community of goods. Were it allowed free play—were the people of the world to establish what is called free trade, and thus unite their efforts for the maintenance of *the monopoly system*, wages universally would fall to the level of those of the poorest countries of the world, for with every step those of England would, of necessity, fall, because they must be kept at that point which would enable her people to underwork the world, and the tendency everywhere would be, as it has been in Ireland and India, downward. The adoption of perfect free trade by this country would, for a short time, produce some activity there, but a very short period would prove that we bought far less under free trade than we had done with protection, and in the mean time the disproportion of the English population would have largely increased, and the difficulty would be then far greater than it is now, great even as it is. We now *pay for* far less merchandise than we did three years since, and were it not that we are still able to buy on credit, we should make smaller demands on England than we have done at any period since 1842. The greater the amount of capital thus lent to us, the lower must fall the condition of the English labourer. Every step now being made by England is a step downwards, and if we would not have our labourers reduced to a level with hers we must, by protection, endeavour to raise hers to a level with ours, as it will do by relieving us from the necessity for *dependence* upon commerce with a people whose labour is lower in the scale than our own. It tends to raise the value of man abroad and at home, and to enable all to obtain *more* food, fuel, and clothing with *less* labour. Under it immigration has always increased, and it has declined with its diminution. That it must tend to raise wages abroad is obvious from the fact that so many hundreds of thousands of the population of Europe, held to be surplus, have sought our shores, thus diminishing the quantity of labour seeking there to be employed.

With the approach to what is called freedom of trade, that system which tends to the maintenance of the monopoly of machinery in England, the value of labour here is falling towards the level of that of England. The present diminished production of coal and iron is maintained only by aid of a great diminution of wages. Labour is becoming surplus, and immigration is already falling off. This year will show a large diminution therein, and every step in that direction must be attended with a rise of freights tending to diminish the power to export either food or cotton. With the diminution of wages at the North, there is already a diminished power to consume either food or clothing, with increase in the surplus that is to be sent. Thus the same measures that increase the *necessity* for depending on machinery of transportation diminish the *power* to obtain it, to the deterioration of the condition of the whole body of the people, labourers and capitalists, farmers and planters, manufacturers and ship-owners; and the same which tend to diminish our necessities for depending thereon, tend to increase our power to obtain it, to diminish the burden now pressing upon the land-owners and labourers of Europe, and to bring about that state of things which shall give to us and them perfect freedom of trade. The harmony of all interests, whether individual or national, becomes more and more obvious the more the subject is examined.

It may not be uninstructive to review the last few years, with special reference to the discords that have occasionally been seen to exist between the employers and the employed, accompanied by strikes, combinations, &c., with a view to show their cause.

It is within the recollection of most of my readers that the years from 1836 to 1839 were distinguished for disturbances of this kind. The cause is obvious. Production was diminishing, and the labourer found himself unable to obtain the quantity of food, fuel, and clothing to which he had been accustomed. He desired a rise of money-wages to meet the rise in the price of food, but the employer could not give it, and hence arose combinations for the purpose of compelling him to do so.

From 1844 to 1848, harmony was restored, because production increased, and the labourer found that each year enabled him to obtain more food and clothing, and better shelter, with the same labour.

The last year has been marked by a succession of combinations. In the coal region of Pennsylvania, at Pittsburgh, Lowell, and various other places, there have been strikes and turn-outs, some of them long-continued; and everywhere there have been clamours for the passage of laws restricting the hours of labour; but those who thus clamoured desired that wages should remain as they were. These things all result from the one great fact that the productiveness of labour is diminishing, and that wages are tending towards the European level.

To that cause was due the jealousy of foreigners which gave rise to the "native" party. In 1842, employment was almost unattainable, and the native workmen were indisposed to divide with strangers the little that was to be had. With the increased productiveness of labour wages rose, and the "native" party almost died out, while the import of foreigners was quadrupled. If the system of 1846 be continued, the same jealousy will re-appear, and foreigners will be proscribed, while immigration will be diminished.

It is to the interest of the native workmen that the wages of Europe should be brought up to a level with our own, and the only way in which that can be accomplished is for us to pursue a course that shall tend to render it the interest of every man in Europe that can find means to pay his passage to endeavour to reach our shores. Every one that comes will be a producer of something, and every one therefore a customer to others for their products. Look where we may, there is the most perfect harmony of interest.

MAKING OF CHESHIRE CHEESE. (*Prize Essay.*) By Henry White.

It has sometimes been a matter of dispute among Englishmen which particular county or district is the most famous for the making of cheese. I think, if quantity is to be taken into account as well as quality, the decision must be in favour of Cheshire, as there cannot be less, upon a moderate calculation, than 12,000 tons made in that county annually; a considerable portion of which is of excellent quality.

There is reason for believing that cheese has been made in Cheshire for at least 700 years:* and, from allusions made to cheese and to curd in the Old Testament,† it is evident that an article of this nature must have been known and used at a very early period.

* "The fame of the cheeses of Cheshire is of very ancient date: at least as old as the reign of Henry I. (A. D. 1100.) The Countess Constance of Chester, though the wife of Hugh Lupus, the king's first cousin, kept a herd of kine, and made good cheeses, three of which she presented to the Archbishop of Canterbury. Giraldus Cambrensis bears honourable testimony to the excellence of the Cheshire cheeses of the day."—(*Bell's Weekly Messenger, Feb.* 22, 1841.) "Poor men eat cheese for hunger, rich for digestion. It seems that the ancient British had no skill in the making thereof, till taught by the Romans, and now the Romans may even learn of us more exactness therein. The county of Chester doth afford the best for quantity and quality; and yet their cows are not (as in other shires) housed in the winter; so that it may seem strange, that the hardiest kine should yield the tenderest cheese. Some essayed in vain to make the like in other places, though hence they fetched both their kine and dairy-maids. It seems they should have fetched their ground too, (wherein surely some occult excellency in this kind,) or else so good cheese will not be made. I here not the like commendation of the butter in this county; and perchance these two commodities are like stars of a different horizon, so that the elevation of the one to eminency is the depression of the other."—*Fuller's Worthies.*

† 1 Sam. xvii. 18; 2 Sam. xvii. 29; Job x. 10.

It is scarcely necessary to premise that milk, from which cheese is made, consists of three distinct parts—*cream, curd,* and *whey*—into which, by repose, it spontaneously separates; but the process of separating the whey from the other bodies may, as in cheese-making, be accelerated by infusing a small quantity of a simple acid extracted from cured and dried maw-skins,* which have been previously dissolved in warm water. This infusion is commonly called "steep," but more properly *rennet.*

The art of cheese-making consists in the complete extraction of the whey and in the proper compacting and curing of the curd. The richness of the cheese depends upon the quality of the milk, or, in other words, on the proportion of cream which the milk contains. The cheese of Cheshire is professedly made from new milk, or milk from which no cream has been taken.—It is, however, well known, that in many dairies, in the morning before cheese making, a small quantity of cream is skimmed off the previous evening's milk; this cream is either churned by itself, or mixed with whey-cream, by which there is obtained a better quality and greater quantity of (so-called) whey-butter. It may appear singular to some, that any portion of cream should be found in whey, but such is the fact, and the means used in Cheshire for extracting it are very simple *(See Appendix.)*

Before entering into a detailed description of the mode employed in Cheshire in the making of cheese, I would remark that this Essay is founded upon my own observations, made during a fifteen years' residence in, and intimate connexion with, that county; which latter is still existing. I have long felt an interest in the subject of cheese-making, with a desire to see it conducted upon more scientific principles, from a conviction that, were such the case, both the pocket of the producer and the stomach of the consumer would often be more agreeably filled: but I do not wish it to be supposed from this remark that I profess myself conversant with these principles: my information being more of a practical nature, and as such I offer it to the Society.

Number of Cows kept, and Produce.—The number of cows kept for the purposes of a cheese *dairy* is seldom less than 8 or 10, or more than 70 or 80; and is of course regulated by the size of the farms—these average about 90 or 100 statute acres, upon each of which about 15 or 18 cows are kept. From 18 cows, a cheese of from 36 lbs. to 54 lbs. weight is made daily during four or five months of the summer.† The annual produce of cheese per cow depends both upon the quality of the animal (with the mode of keeping her) and of the *land,* or rather the *herbage.* I have known many farmers sustain great loss by not feeding their cattle sufficiently well in winter. With judicious management, about 3 ewt. of cheese (of 112 lbs.) may be considered as the average amount made per annum upon land let for 30*s.* [$7 50 annual rent] a statute acre; but in a few instances 5 ewt. per cow, and even more, is sometimes made. This can only be from a small and choice stock.

The Season.—It is the practice amongst farmers in this county to arrange so as to have most of their cows calving in the months of March and April; and so soon as the calves are fed or disposed of, the cheese-making commences, and continues (excepting in small dairies) to nearly the end of the year. In January and February the quantity of milk obtained is often so small that the farmer prefers selling it in the neighboring towns or making it into butter. There are, however, instances, in large dairies (of 70 or 80 cows), of cheese being made throughout the year.

Milking.—The operation commences about five o'clock in the morning, and five or six in the evening. In this county it is the practice for most of the servants, both men and maids, to assist, and for the cows to be milked in the cow-houses (called here "shippons") all the year round. When, as is usual, there is one milker for every six or seven cows, the milking seldom exceeds an hour and a quarter.*

The milk of new-calved cows is not mixed with the other until about four or five days after calving.

Offices and Utensils.—As the evening's milk is seldom made into cheese until the following morning, and sometimes in small dairies (where four "meals" are used) not until the second morning, a cool "milk-house" is necessary; on which account it usually occupies that side of the farm-house least exposed to the sun. The utensils in which the milk is kept are usually portable shallow earthenware vessels called "pan-mugs," and in some dairies leaden or zinc coolers. Most of the milk-rooms have lattice or wire windows for the circulation of air, and the floors are laid in a sloping form for the free escape of the cold water with which they are daily swilled throughout the summer months. If precautions of this nature be not attended to, there is a risk of the evening's milk becoming *sour;* in which case, whatever quantity of new milk be added to it in the morning, the cheese will be *sour* also. I am led to believe that a temperature of as near 50° Fahrenheit as could be maintained, would be best for a milk-house throughout the year.—The *dairy* is generally situate near the milk-house, and fitted up with two *set-pans* or *boilers*†—a large one for scalding the whey, and a smaller one for heating water. The "cheese-presses" and "screw" are kept within this room, and the operation of cheese-making is here carried on. Some farm-houses are not provided with a *dairy,* and the cheese is then made in the *kitchen*—this is commonly the case on small farms. The "salting and drying-house" (often one and the same room), if conveniently situated, adjoins the dairy. The cheese is placed here on stone or wooden benches, salted *externally,* and is afterwards left so as to dry gradually before being removed to the cheese-room. By some dairy-maids, this external salting is dispensed with, and the room is then of

* The *stomachs of sucking calves.* See the method of curing these in the Appendix.

† The Marquess of Cholmondeley and Mr. Tollemache, M. P., with a laudable desire to encourage the suspension of Sunday labor, have, for several years, offered through the South Cheshire Agricultural Society a prize of £20 to such farmer as shall have made the best cheese without infringing on the Sabbath rest. Although this prize has, I believe, been regularly claimed, yet, from a variety of causes, the practice of making cheese on the Sabbath, as on other days, is still very general.

* I was told by an apparently very respectable man, at Saratoga Springs last week, that he knew a New-York farmer, worth more than $200,000, whose daughters milked the cows regularly.

† South of New-Jersey, milk-house and dairy are synonymous.

course only used for *drying*. These offices are all on the ground-floor. In some cases the cheese-room is over the dairy, in others over the kitchen, or some other room wherein a fire is usually kept, and sometimes, though rarely, over the *cow-houses* or *stables*. Light and air are invariably excluded, either by a curtain or shutters.* The floor is either of plaster (gypsum) or boards, but more commonly the latter; some of the larger cheese-rooms are warmed by stoves, or hot air, and occasionally, though rarely, by fire-places in the room itself. The small cheese-rooms are seldom supplied with artificial heat, except what is gained from the rooms below.—Some cheese-rooms are occasionally found to be in the summer time too warm, in which case the cheese has to be removed for a time to a cooler part of the house. This is more generally necessary where the building is slated, and exposed to the noon-day sun; but is seldom or never experienced where the roof is of thatch. The size of these offices is of course regulated by the extent of the farm; where 30 cows are kept I find them nearly as follows:

	Yds.	Yds.	Sq.Yds.
Milk-house	6 by 3	or about	18
Dairy	6 by 5	"	30
Salting and drying-house	4 by 5	"	20
Cheese-room over dairy and drying-house	10 by 5 (or 8 by 6)	"	50

The utensils, excepting those I have described, will be noticed hereafter.

Process of Cheese-making.—As the first process—namely, that of extracting the whey and salting—occupies, according to circumstances, from five to seven hours, it is found most convenient to commence it in the morning. This being the case, the evening's milk has to be kept all night in the milk-house. In the morning, the cream having been skimmed off, a portion of this milk is warmed. This is done in a circular flat-bottomed brass or tin pan, (see *a*, fig. 4,) floated in the boiler, the water of which has been previously heated for that purpose: the size of this pan is about 20 inches in diameter and 8 inches deep. The quantity to be warmed depends upon the state of the weather; for the first two or three months of the season (say March, April and May) it is not unusual to heat as much as half the evening's milk to a temperature of 100° Fahrenheit, and this heat is rarely exceeded, excepting by those dairymaids who wish to save themselves trouble in the after process. The "cheese-tub," which is similar to a brewing-tub, having been placed in readiness in the dairy, the cold milk is now put in and the warm added. Supposing the temperature of the cold milk to be about 50°, and the warm 100°, and they were in equal proportions, the heat after mixing would be 75°, or something less; but in warm weather it will be sufficient if it reaches 70°. I have known instances of good cheese being made in summer without warming any portion of the evening's milk—indeed, such now is becoming the general practice. In very warm weather some dairy-maids think it necessary to reduce even the temperature of the morning's milk. The *cream*, which is diluted either in about double its quantity of warm or new milk, or by being exposed to the heat of the boiler in the same way as the milk, is next put in. I have before stated that it is customary to retain a small part of the cream for butter: when this is the case, it is considered best to skim it off the whole surface of the cream before diluting, as by that means the froth and bubbles, which are supposed to be prejudicial to the cheese, will, for the most part, be taken off. This leads me to the conclusion that *fixed air*, if it gets mixed in the curd, has been found to be detrimental. Since warming of fluids has a tendency to dispel this fixed air, it is perhaps worthy of consideration whether it would not be better to warm the *whole* of the evening's milk to the required temperature, rather than heating a *part* of it so high as 100°. The process adopted with the evening's milk, as above described, is generally finished previous to the time of milking in the morning; but if not, the dairymaid stops and completes it before the *new* milk is brought in from the cows. This new or morning's milk is then added by passing it through a *sieve* placed upon the "cheese-ladder" over the cheese-tub. When the whole is thus collected, some few bubbles are invariably found floating on the surface; these are skimmed off and passed through the sieve to break them.

One of the most important points now to be attended to is the heat of the milk preparatory to coagulation, as the milk, if at a proper temperature, should now be ready to "set together," that is, to receive the rennet. This heat is rarely tested by any other thermometer than that of the dairymaid's hand; some may, and I have no doubt do, determine it pretty correctly, but cannot always.

In consequence of the changes in the weather it is difficult even for an experienced dairymaid to know at all times what proportion of the evening's milk should be warmed; she is therefore cautious not to warm too much, until the morning's milk is added and the consequent heat ascertained. If it be deemed too cool, a little of the evening's milk which has been reserved is then warmed, so as to produce the heat required; but when none has been reserved, the necessary quantity taken from the tub after the admixture of the two milkings is warmed for that purpose. Little is known amongst the farmers or dairymaids as to the *precise heat* which is best. I have seldom heard the subject named, except by a vague comparison, that such and such dairies were made *colder* or *warmer* than others. I am acquainted with some farmers whose wives are said to have a peculiar method of their own, and who, I believe, obtain a high price for their cheese in the Manchester market, chiefly from the tendency of the cheese to green mould. I know little of the system which these parties adopt, but I understand they make their cheese "cold"—that is, set the milk together at a low temperature; and I am also inclined to think they use less salt than others. I have not solicited the *privilege* of prying into the *mysteries* pursued in these dairies, nor could I expect to have been so indulged if I had, especially if they had supposed it was for publication. It is said these parties get a greater price for their cheese than many of their neighbors, which I have no reason to doubt; and I think, from what I have seen, they make quite as great a quantity per cow. But the *real* price obtained, and the *precise* quantity made in any particular dairy, is seldom known beyond the farmer's own family and the factor.

I ought, perhaps, to state that I have tasted some of these cheeses, and find them generally very good, fair toasters, and without coloring;

* One reason, amongst others, assigned for this (universal) practice, is its tendency to prevent the mischievous effects of the fly.

but in some I have detected a slight sourness: from this cause, or, what is more probable, from too little salt being used, the cheese will not keep long before decomposition takes place.—To the farmer this would only be of consequence in the event of his not being able to sell the article at the time he wished. In the dairies where I have been permitted to take observations, the lowest heat of setting the milk together was 77°. I am disposed to think those who make a so-called *cold cheese* do not adopt much lower temperatures, even in summer, than 74° or 75°; since a much longer time would be occupied in gathering and compacting the curd, and considerable risk incurred of having what is termed a *sour cheese*.

The evening's milk in the tub being at or about 75°, as before stated, and the milk which is brought from the cows 90° or 95°, the temperature of the whole is then found to be somewhere between 80° and 85°; and I am of opinion that the heat at which milk ought to be and is commonly coagulated, ranges between those two temperatures.*

When *coloring* is used, which is not so extensively the case as formerly, it is put into the milk immediately before the rennet. The nature of the article used for this purpose I propose to investigate under a distinct head in the Appendix. The *quantity* of coloring is in some degree regulated by the quality of the milk: if a considerable portion of the cream of the evening's milk has been taken out for making butter, a greater quantity of this coloring matter will be required to give the cheese that appearance which is found necessary to please the *eye* of the consumer, and particularly of those residing in London or at a distance. *Annatto* (or, rather, a coloring matter which *goes by that name*) is the article used; 1 lb. of it for each ton of cheese is a moderate calculation; this would be after the rate of half an ounce to 75 lbs.† The present retail price of the "best *real* Spanish Annatto" is 4s. per lb. The coloring is prepared and applied in different ways, but the most common is to take a piece of the requisite size, to fold it in a small bit of linen, and put it in half or a quarter of a pint of warm water the previous night. By this means it gets sufficiently dissolved. When the infusion is poured into the milk, the linen bag containing it is dipped in, and rubbed betwixt the fingers until the coloring is all discharged. The dregs, if any, remain in the bag.

The *rennet*, or *steep* as it is commonly called, is next added. I have already stated, in the introduction, that this is an infusion made from the preserved stomach or maw of sucking calves, thence called *maw-skins* or *bag-skins*. A recipe for preserving the skins will be found in the Appendix. To define the quantity of rennet sufficient for coagulating a given quantity of milk, is a very difficult matter, as the maw-skins vary so much in quality. When the farmer is laying in a stock for the year, he generally calculates upon a dozen of skins to a ton of cheese; but the skins vary in size, (the price when cured is from 6s. to 9s. per dozen.) In using them, it is the practice often to cut two skins at once. Three square inches taken from the *bottom* (or strongest part) of one, and one or two inches from the top (or weakest part) of the other, is generally found sufficient for sixty gallons of milk. These two pieces of skin are put into a cup containing about half a pint of lukewarm water, with the addition of a tea-spoonful of salt, some part of the day previous to being used. The water thus impregnated with the maw-skin is passed through the sieve into the milk, but the skin itself is generally, though not always, kept out. The rennet-cup is well *scalded* before being used again. I have been told that some farmers make a sufficiently large quantity of rennet to last for several weeks, and find it to answer better than making a small quantity daily. The question is, will it keep *sweet?*

The coloring and rennet having been put in, the milk is well stirred and left to coagulate. It is usual to invert the skimming-dish on the surface of the milk—a practice of doubtful propriety, for this reason, that the curd immediately under it does not attain the same adhesiveness as the other, and is one of the causes of what is commonly called *slip curd*. The tub is now covered up, either with a wooden lid, or with cloths supported by the "cheese ladder;" these assist in preserving the heat of the milk, and protect it from dust and dirt.

The coagulation (or "coming") is generally effected in an hour or an hour and a half. As far as my own observations extend, I am led to think that an average of these two is sufficiently long, if the proper means are used in effecting the formation of the curd: for it is well known that, *cæteris paribus*, the warmer the milk is at the time of setting together, or the stronger the rennet, the sooner will the coagulation take place, but the curd will in consequence be tougher and less in quantity; on the contrary, the cooler the milk, or the weaker the rennet, the longer will the curd be in forming, and the more tender its quality, but its quantity will be greater. By attention to these results the cheese-maker may soon decide when too much or too little rennet has been put in the milk, and correct the quantity the next time. It may be proper here to state that too much rennet has a tendency to impart an unpleasant flavor, or bitterness, to the cheese.

It may generally be expected that the heat of the curd when formed will be four or five degrees less than the milk was when set together; and it is desirable, particularly in cool weather, that this difference should not be greater, otherwise the subsequent labor will be more difficult. To determine exactly when the *curd* is in a fit state for what is called "breaking," requires some practical knowledge; with attention this is soon acquired. The point is generally determined by gently pressing the surface of the milk with the back of the hand, or by lifting up the skimming-dish, beneath which the curd and whey will distinctly appear if the coagulation is complete. Another criterion is the color of the whey, which should be of a pale green.

The "breaking" and "gathering" of the curd

* Since writing the above, I have met with a farmer in Eddisbury Hundred, who says he used the thermometer during the year 1841 for the first time, and that the heat he uniformly adopted was 84°. I also found a thermometer at another dairy near to this, but it was not in use. I was allowed to test the heat of the milk with it, and found it 78°; this was in *June*. The precise heat at which milk ought to be coagulated is a matter of vital importance in cheese-making, and can only be ascertained by a series of careful and judicious experiments made by scientific and practical parties.

† The juice of the yellow carrot and the flower of Marygold are also used for coloring Cheese.

is the next process. This used formerly to be done by means of the hands and skimming-dish (a practice still continued in some dairies); but the *curd-breaker* is now generally made use of for this purpose (see Fig. 1). It is made of wire-work, in an oval form, and has a tin rim round it about an inch and a half broad. This wire-work cuts the curd, by being passed through it perpendicularly *very, very* gently at first, and in different directions, so that the whole mass is separated into very small portions. The length of time required for the operation depends upon the quantity of curd: for a 60 pound cheese the operation often takes twenty or twenty-five minutes. After this the curd is left for a quarter of an hour to separate from the whey, and, if the weather be cool, the tub is covered to retain the heat. The curd having separated, which it does by sinking, a portion of the whey at the top is then taken out by the portable brass or tin pan before alluded to, being *pressed* into it, and emptied into the *set-pan*. The curd is then gently broken by the dairy-maid and her assistant passing their hands down to the bottom of the tub, and buoying up a portion of the curd at each time to the surface, or by again using the curd-breaker. The curd having been brought to the top, is easily seized, and separated into smaller portions, and the whey thereby released. This operation takes about half an hour. After the expiration of another half hour (or so soon as the curd is considered sufficiently settled—for there is no saying to five or ten minutes how long each particular interval of rest should be), more whey is taken out, and the curd afterwards drawn as much into one half of the bottom of the tub as its loose texture will admit of.* Upon the curd is then placed a semi-circular board adapted to the size of the tub, with a weight of about 30 pound placed upon it. This board is perforated with holes, about half an inch in diameter, to allow the whey to escape through. The tub is now set three or four inches atilt to drain the whey more readily from the curd, and to admit of its being collected and carried off. The skimming-dish is again required to lade out the whey. The whey, on its way to the set-pan, is passed through a sieve, to collect any curd which may happen to be floating in it. This curd is what is called *slip curd*, which by some is not returned to the tub, for the reason I have before stated. The weight and board are shortly taken off, and such part of the curd as has been squeezed from under them is again collected on one side, and a heavier weight (say 50 or 60 pound) applied as before. As the whey escapes from the curd it is laded out. In the course of a quarter of an hour the board is again removed, the curd cut in intersections of six or eight inches apart, to assist the discharge of the whey, and the board, with additional weights (about double the last), again applied. Some dairy-maids now add the slip curd. The weights are again increased if it be thought necessary: observing always to *let the pressure which is applied be gradual, and regulated by the degree of compactness of the curd*, for if this is not attended to now, as well as afterwards, a considerable portion of butyraceous matter will be forced out and the cheese of course deteriorated.

The curd is again cut into square pieces, taken out of the cheese-tub and broken a little by the hands as it is passed into the "thrusting-tub" (*a*, Figs. 2 and 3). [In some dairies a large-sized cheese-vat, in others a willow basket is substituted for the thrusting-tub.] In this the extraction of the whey is afterwards continued by the application of "the screw," of which there are two or three kinds, but all on the same principle (see Figs. 2 and 3). The old plan of *thrusting*—and from which the *term* is no doubt derived—was by means of a pole four or five yards long, fixed at one end into an upright post, whilst at the other was seated a lusty lad or a man, who kept regularly pressing down the pole upon the curd, the pole acting as a lever. Both poles and men are now almost entirely expelled from the Cheshire dairies; and the *screw* is also likely to be superseded by the "lever press" (Fig. 5). The advantages of this over the screw are, *that it sinks by its own action with the curd—any degree of pressure required can be applied and gradually increased, and less attention is necessary*; whereas the pressure from the screw is sudden and uncertain, and having no self-action, requires the dairy-maid's assistance every five or ten minutes to render it effectual.

The "thrusting-tub," in which the curd has now to be pressed, is round, and is perforated with holes at the sides and bottom for the whey to escape through (see *a*, Figs. 2 and 3). Before the curd is put in, a "cheese-cloth" of the coarsest kind, about one and a half yard long, and a yard wide, (or of dimensions sufficient to contain the curd), is placed in it.* In this the curd, after being broken, as before stated, is enveloped, and a "sinker," or strong circular board, which fits the inside of the tub, placed on it (*b*, Figs. 2 and 3). Upon this the screw (or lever press, if used) is let down, and the power gradually applied.

To assist still further the discharge of the whey, long iron skewers are introduced through the perforations in the tub, with their points directed upwards, so that when the skewers are withdrawn there is a drain made for the whey to follow. These skewers do not remain in more than five or ten minutes; the pressure is continued a little longer. The curd is now cut *through*, in intersections of two or three inches apart, with a large *dull* knife, so as not to injure the cheese-cloth, and the edge or corner of the curd is cut off all round, and placed in the centre. After this the pressure is again applied, and gradually increased, and the skewers introduced and withdrawn as before, after the lapse of about fifteen or twenty minutes. The curd is then taken completely out of the tub, cut into four or five pieces, and each piece broken separately with the hands to about the size of two or three inches square. A clean dry cloth is made use of, the curd folded in it, and again pressed and skewered. These operations are repeated until the whey is sufficiently extracted to admit of the

* At this stage, it is the practice with some dairy-maids, when they suppose the curd is colder or more tender than it ought to be, to return a few gallons of whey after it has been heated over the boiler in the brass pan into the tub again, to assist the discharge of the remaining whey. If, on the contrary, the curd is found warmer than is intended or desirable, which is sometimes the case in hot weather or during thunder, a few gallons of cold water are applied to prevent the curd becoming tough. These inconveniences would, in my opinion, seldom if ever happen if a thermometer was used at first, and the proper heat at that time adhered to.

* *Cheese-cloths* are *linen*, of a rather closer texture than canvass, and made for the purpose. The coarse kind are sometimes termed *screw-cloths*.

curd being *salted*, which is the next part of the process.

If the milk is set together at six o'clock, and the coagulation takes place in an hour and a quarter, the breaking, gathering, and preparation for salting is generally accomplished by eleven or twelve o'clock.

This is merely mentioned as some guide to the *new beginner*, who may not be able to judge from the state of the curd when it is fit for salting. I may here observe that it is the practice in some dairies to salt the curd, whilst, in my opinion, there is *too much whey in it*.

The *quantity of salt* used is regulated by some old custom, or by the fancy or taste of the dairy-maid, and with about as good a chance of correctness as that with which she regulates the temperature of the milk by the touch. That clever and experienced persons may determine the proper quantity of salt in this way tolerably well, I admit; but there are many others who *fall into error*, and all *for want of some fixed rule*. If there be a certain proportion of salt which would answer the purpose best, which there doubtless is, why not ascertain and adopt it?

"In all dairies" (says Mr. Wedge, the author of the original 'Report of the Agriculture of Cheshire,' written many years ago, but still equally true) "the same points are admitted to be essential, but although the means of obtaining those are, upon farms similarly circumstanced, so far alike, as to differ materially in the minutiæ only, yet upon these minutiæ much of the art of cheese-making depends.

"That an exact uniformity does not prevail in every part of the process, is no wonder; for there is not any of the business which is conducted in a dairy which tends to chemical exactness. Where there is no precision, there can be no just comparison; and where no comparison can be made, there exists no foundation for an attempt at uniformity. *The degree of heat at setting the milk together is never measured, the quantity of steep is guessed at*, and its quality not exactly known; *the quantity of salt necessary is undefined, and the sweating or fermenting of the cheese, when made, is accidental.*"

As an antiseptic, a certain quantity of salt is necessary: it is the same in this respect with cheese as it is with butter or bacon. There may be, and no doubt are, differences of opinion, both amongst makers and consumers of cheese, as to the degree of saltness which is best; and it may be necessary, in order to suit the palates of the *many*, that there should be a *variety*. I am willing to admit the force of the argument, so far, that there might be these shades of difference in different dairies, but think that they ought not to exist in one and the same dairy.—Each maker strives at uniformity as regards the *thickness* and *color* of his cheese, and would like also to attain uniformity in flavor if he could. Why not, therefore, measure or weigh the salt before using; regulating the same by the quantity of milk or the weight or quantity of curd?*

The former would easily be ascertained by means of a *gauge*, or graduated rod, which any farmer might make for himself, to suit his own cheese-tub. The way to make it would be to pour into the tub a gallon of water, or any liquid, and then to note its hight, and mark it on the rod. This being done, put in another gallon and again mark the hight, and so on until the tub is full; taking care afterwards to introduce the rod into the *same part of the tub*, as the bottoms are not often level.

It has generally been considered that a gallon of milk (supposing little or no cream has been taken from it) will produce upon an average of the season one pound of saleable cheese: that is, when the cheese is four or five months old.—In autumn there is always more curd from the same quantity of milk than at any other part of the season.

During wet weather there will sometimes be more milk than usual, though not a proportionately greater quantity of curd. An experienced dairy-maid soon detects these different results, and makes allowances accordingly. I have met with no dairy-maid who regularly weighs the salt; but a highly-respectable farmer, whose wife makes a first-rate cheese, has given me the weight used in his dairy, as near as the same can be *computed*. It is as follows:—

	lb.	oz.	
In March and April their cheeses average about	30	and ab't 0	10 salt is used.
In May, June and July	70	" 2	0 "
In August	60	" 1	12 "
In September	50	" 1	4 "
In October and Novem'er	30	" 0	10 "

In the above instance it will be seen that more in proportion was used in summer than at other times, and that the average is 1 lb. of salt for 40 lbs. of dried cheese (or say forty gallons of milk).

I was favored with an account from another dairy in which, to oblige me, the salt *for once* was weighed. For a cheese which weighed 46 lbs. a few days after making (say 42 lbs. at four months old) 1 lb. 1 oz. was used. This is also after the rate of 1 lb. of salt for 40 lbs. of dried cheese, and was said to be the quantity uniformly used throughout the year in this dairy, which consisted of about forty cows.

A third account is from a dairy of sixteen cows: the quantity of salt used was generally about 1 lb. for 45 lbs. of cheese; but the dairy-maid made a trial last year with one cheese, using only three-quarters of a pound. The cheese was made at the beginning of June, and when weighed in the middle of September was 42 lbs. This cheese was admitted to be better than the others in the same dairy.*

The salt termed the "middle grained" is the kind generally used; but some use "fine." Before applying it the curd is cut into three or four equal-sized pieces, and each of these is broken into smaller pieces by hand, or is passed *once* through the curd-mill† (fig. 4). The salt is then

* Since writing the above I have learnt that a farmer in South Cheshire, well known for his introduction of improvements in agriculture, has commenced the system of weighing his curd previous to salting it, and he says he uses salt in the proportion of 1 lb. to 42 lbs of curd. He also informs me he sets his milk together by a thermometer, and at a temperature of 76° or 77°.—May, 1845.

* It may not be out of place here to state that at Northwich, which is about the centre of the county, and where the principal salt-works are found, salt is at present bought for 8d. per bushel of 56 lbs. In large quantities the price is considerably lower.

† The *curd-mill* is of recent introduction, and it is only in a few dairies that it is met with; some dairy-maids highly approving, others objecting to it. I think it will soon be more generally adopted, as it effects a saving in time, and breaks the curd more regularly than it can be done by hand.

scattered over it, and the "breaking" continued either by the hands, the curd-mill, or both, until the salt is well intermixed and the curd perfectly crumbled. Each portion as it is broken is put into the cheese-vat, in which has first been placed a clean and rather finer cloth than was used for the previous process, and the curd is compacted as much with the hands as possible, To admit of the curd being properly pressed, it is necessary to put it into such a vat as it will *overfill* by at least two inches. It is also rounded up a little in the middle. The cloth is then brought over it and tucked in at the edges of the vat with a small wooden knife or other dull-edged instrument. In order to support the outside of that part of the curd which is above the vat, and to keep it in proper form when the press is applied, a tin or zinc hoop or "fillet," the edges of which are rounded off so as not to cut the cloth, and the ends lapping over and unattached, so that the same fillet will do for different sizes of cheese, is introduced round the inside of the top of the vat. The "fillet" thus placed sinks with the curd, and having small perforations in it, the emission of the whey is effected through it as through the perforations of the vat. Since it has become the fashion to make Cheshire cheeses *thicker* than they used to be, it is no unusual thing to see fillets six or eight inches broad.

The vat is now again placed under the screw or lever press, and the skewering is also continued. The pressure is increased at intervals, and the skewers inserted in fresh places to accelerate as much as possible the discharge of the remaining whey or "*thrustings*," as it is now termed.

In the course of an hour from the time of salting, the curd is taken from under the screw or lever press and out of the vat, for the purpose of being turned upside down, which is done on a table. In the first place, the angles of that side which was topmost in the vat are cut off; a circular piece, two or three inches deep, is often also scooped out of the centre, and both are broken small with the hands and rounded up in the middle. The cloth being drawn over the curd, the vat is then turned down upon it, and re-turning the vat with the curd in it, the other angles and centre part of the curd are broken in a similar manner: after which the tin fillet is put on, and the screwing and pressing is continued as before for about half an hour or an hour. It will, probably, be two or three o'clock in the afternoon before the curd (or cheese, as it may now be termed) *is got under the press*; that is, when it is removed from the screw to the stone press: but where the lever press is used instead of the screw, which, I think, might always be advantageously done, all the change that will now be required is a little more weight at the end of the lever.

Before turning the cheese for the purpose of placing it under the press, it is usual to prick it perpendicularly down with a skewer in several places, for the purpose of making drains for the whey, after having been so turned. A clean cloth is applied, and where the lever press is not used the cheese is put under one of the lightest of the other kind. A pressure of six, eight, or ten cwt., according to the size of the cheese, will be sufficient. This is generally accomplished by about two or three o'clock in the afternoon. Smaller skewers are now used, and remain (by removing them occasionally into fresh places) until about four o'clock: they are then withdrawn, but the cheese remains half an hour longer undisturbed, to allow the whey to drain from it. It is then, or some time in the evening, turned, a clean cloth is put over it, and the pressing continued, If the lever press be used, the weight may be a little increased.

On the *second day* the cheese is generally turned twice or three times; it is also skewered, and clean cloths are used each time of turning. I would observe here, that if any of the cloths are used again before they have been washed and dried in the open air, great care should be taken that they be well *scalded*. The presses used for at least the two first days, and, if possible, during the whole process, should be situate in the dairy, kitchen, or some other moderately *warm place*, otherwise the whey will be longer in discharging, and more liable on that account, from the acidity which it soon acquires, to injure the flavor of the cheese. Another advantage of the lever press is, that in cold weather it may be easily moved to a sufficently warm place, which cannot be the case with the common presses. These common presses are chiefly made of one square block of stone fixed in a wooden frame, but are also made of wooden boxes filled with *slag* or other heavy material. They are generally fixed by the walls of the dairy, for the purpose of being stayed to them, and being there most out of the way; when there is not room in the dairy or kitchen, they are placed in the salting room or pantry, which latter places are often much too cold for the purpose, as the whey seldom gets thoroughly extracted when the presses are in cold situations.

On the *third day*, the cheese is again turned once or twice, but ought not to require any skewering. The heaviest press is now had recourse to, and for a cheese of 60 lbs. or 70 lbs. weight about 30 *cwt.* will be pressure sufficient; but some dairy-maids apply as much as two tons, their heaviest press being that weight. A cheese-press of this weight, made of a block of red freestone, would be 3 ft. 2 inches long, 2 ft. 8 inches wide, and 3 ft. 2 inches high.

On the *fourth day*, it is usual in most dairies to discontinue the pressing, but in others it is continued for a day or two longer.

The cheese is then removed to what is called—

THE SALTING AND DRYING-ROOM.—Sometimes these are distinct apartments, but more generally one room suffices for both purposes. The salt can now, of course, be only applied *externally*; and the good, *if any*, effected is to harden the coat of the cheese. The cheese I have before alluded to, as having been made with three-quarters of a pound of salt, and which *was much above an average in quality*, was removed, as an experiment, *direct from the press to the cheese-room*. I am inclined to think this is the better system, or at least that a great deal of the present labor of the salting-house might be dispensed with.

It is, however, only right to state that in most of the dairies of this county the practice of *external salting* still obtains. I will therefore describe the process usually adopted.

The cheese is taken out of the vat, and a strong bandage called a "fillet," about 2 inches broad, and long enough to go three times round the cheese, is used. As this bandage is put on, salt is applied, underneath it, to the coat of the cheese. The bandage is fastened with strong

pins, the cheese placed on stone or wooden shelves or benches, and salt spread on the top to within an inch or two of the edges. The cheese is turned daily, and fresh salt and a clean bandage applied. In some few dairies it is the practice, before the salting above described, to half immerse the cheese for two or three days in strong brine, kept in a shallow tub for that purpose. The salting process above described is continued for various periods: by some for five or six days, by others as long as three weeks. I will give the rule followed by the farmer who furnished me with the particulars of his salting of the curd, (p. 143.) It is as follows:

From the beginning of the season (about March) to the time of the cows being turned out to grass, (12th May,) the cheese remains in salt four days; from thence to the end of July, ten days; in August, eight days; September, six days; and the rest of the season, four days.

It is obvious, from the practice in this dairy, that it is considered necessary for the cheese to remain in salt longer in the middle of summer than at other seasons.

After this salting, the cheese is well wiped or washed, has a clean bandage put round it, and continues in the same room, or an adjoining one, on wooden shelves, for the purpose of being *dried*. It is turned once a day, and remains until it is considered sufficiently dry for being removed to the *cheese-room*. The length of time for keeping cheese in the "drying-house" varies from seven to twenty days; and is regulated by the temperature of the weather, or the *cheese-room* to which it has to be next removed. In hot weather, and especially if the cheese-room is exposed to the heat of the noon-day sun, the change from a *too cold drying-house* (as many often are, except, perhaps, in the middle of summer) to a too hot cheese-room, is calculated to cause *cracks* in the cheese; which said cracks have from time to time to be filled up by the application of bacon-fat, or whey-butter, otherwise mites would soon be generated, and the appearance of the cheese detracted from. To prevent this cracking as much as possible, the salting and drying-houses have rarely, if ever, the windows opened, and drafts or currents of air are thereby prevented. This precaution is also adopted in the cheese-room; and, in addition, the light is excluded either by a shutter or *blind*, as I have before stated.

The cheese I have before alluded to as having been made without any *external salting*, as an experiment, and which *was taken direct from the cheese-press to the cheese-room*, was made in the beginning of June, and at the end of September was ready for the *market*. The quality of the cheese was better than that made in the ordinary way, and all the labor of the salting and drying-house was saved. My own impression is, as I have already hinted, that the drying-rooms are often *too cold*; and that if it is found to be desirable, as perhaps it may be in some dairies, to continue the use of such drying-rooms, the heat should be kept as near as possible at from 50° to 55°. In concluding my remarks on this room, I must not omit to observe that it is necessary the cheeses should remain *bandaged*, in order to prevent their bulging, and also that they should be turned over once a day. If one cheese be made daily, one will consequently—in the course of a certain time after the season of cheese-making commences—have to be removed every day to the *cheese-room*.—When taken to this room, the situation of which I have before described, it is usual to scrape and clean the coat of the cheese, and to place it, in the first instance, in the coolest part of the room—often for a few weeks upon shelves or benches, which are cooler than the floor; subsequently upon the coolest part of the floor, and ultimately upon the warmest part. It is usual to continue the bandage or "fillet" for several weeks after the cheese gets into this room, and indeed in some dairies until it is sold. It is also usual to turn the cheeses, and wipe them with a cloth daily, for at least three or four months, and every alternate day afterwards; and when there are any symptoms of cracking, bacon-fat, hogs'-lard, or some other fatty substance, is applied. The floor of the cheese-room is generally covered with dried rushes, or a coarse grass resembling rushes, called "sniddle," or wheat-straw. The floor should be *level*, otherwise the cheeses will not be kept easily in shape; and should be well washed with hot water and soft soap about twice a-year. The temperature of the cheese-room should, when attainable, range between 60° and 65°. When this is the case, the "first make" will generally be ready for the factor by September or October, and the "latter make" by December or January; but in consequence of many rooms being badly situated and imperfectly heated, the farmer very often does not get his cheese into the market until two or three months after these respective periods.—The object gained in having the cheese-room about the temperature I have named is threefold: the perfect fermentation and ripening of the cheese, the reduction of labor, and the quicker return of *profit*.

It is usual in this county to sell the cheese by what is sometimes termed the *long-hundred*, (120 lbs. to the cwt.) but the factors often require 121 lbs. The price varies with the quality of the article, the state of the market, and the size of the cheese; for large cheeses always sell for more per lb. than smaller ones. There is, perhaps, nothing more difficult to ascertain than the average price of cheese, inasmuch as both farmer and factor make the price a secret. The highest I heard of last season (1843) was 72s. per cwt. of 120 lbs., or a little more than 7d. per lb.; the lowest would probably be about 40s. or 45s.*

Conclusion.—I am aware that a great deal might still be said bearing on this subject. The various defects of cheese, the great difference in the flavor, the effects of different pasturage and food, and various other matters, might be discussed, but it is considered this essay is already too long and tedious. I shall, therefore, content myself by giving the following tabular statement, and the information promised in the Appendix. I cannot, however, close my remarks without expressing my admiration of the industry, cleanliness and frugality of the Cheshire dairymaids. Their labors are great indeed; their cleanliness not to be surpassed; and to their good management it is that the landlord may often consider himself indebted for the *whole of his rent*.

* There is a general wish on the part of the farmers to adopt the standard weight of 112 lbs., but the factors have hitherto in a great measure succeeded in purchasing according to the old custom of 120 lbs. The law for regulating weights and measures has little or no effect in this county, as the numerous customs at variance with that law, and still in operation, bear testimony.

TABULAR STATEMENT

Of Observations taken at Four Farms in CHESHIRE: *viz., Nos.* 1 *and* 2 *in Bucklow Hundred; No.* 3 *in Nantwich Hundred; and No.* 4 *in Eddesbury Hundred.*

Note.—At Farm No. 1 there are Two Observations.

	Day of Observation.	Number of Cows.	Quantity of Milk at Two Milkings, (except No. 2.)	Heat of Milk when the Rennet was put in.	Quantity of Rennet.	Time occupied in Coagulation.	Heat of Curd and Whey after Coagulation.	Heat of Dairy or Room in which the Cheese was made.	Time occupied in gathering the Curd and completing the formation of the Cheese.	Quantity of Salt used internally.	Weight of Cheese a day or two after making.	Weight at some subsequent period.	Quantity of Cream taken from night's milk.	Quantity of Whey.	Quantity of Whey Cream.	Quantity of "Fleetings."	Size of Cheese.
			Galls.			h. m.			h. m.	lb. oz.	lbs.	lbs.	Qts.	Galls.	Qts.	Qts.	Inch.
No. 1.	Nov. 21.	42	43	83°	About 3 sq. in. of skin, 1 pint of water.	0 50	73° but raised with hot whey to 79°	..	5 0	1 1	55	47 Aug. 17 follow'g.	..	37½	5¾	4	15¾ Diam. 6½ Deep. Aug. 17.
	Aug. 17 following.	48	Two Cheeses made in two Tubs. 59 53	88° 86°	3 sq. in. skin, ½ pint of water, to each cheese	1 0 1 0	.. 85°	68° at 7 o'clock.	..	2 4	58½ 53	..	1½ ..	102 22	13½ 3	.. 3	.. ..
No. 2.	Oct. 13.	10	24 Four Milkings.	78°	3 sq. in. skin, ¾ pint of water.	0 45	74°	..	4 0	0 4	..	..	1	47½	..	..	16 Diam. 7¼ Thick. Aug. 30.
No. 3.	Aug. 10.	26	56	..	..	1 0	..	78° at 11 o'clock.	5 15	1 0	60	..					
No. 4.	Aug. 19.	53	107	77°	12 or 16 sq. in. of skin, 1 pint of water.	1 45	72°	Morn. 64°. Noon 67°.	..	4 4 besides one handful in Milk.	Two Cheeses made; weight not ascertain'd	57 53 Sept. 16.	4	98	..	..	15 Diam. 8½ Thick. 15 Diam. 8 Thick. Sept. 16.

These observations are not so complete as might be wished, not having been taken at the time in a *tabular form*, and with a view to publication.

Note.—Cheese loses about 15 per cent. in weight the first year.

APPENDIX.

THE SCALDING OF THE WHEY, AND THE MAKING OF WHEY-BUTTER.—This process is carried on simultaneously with the making of the cheese. The whey which comes from the curd previous to its being salted is called the *green whey*, and that which is extracted afterwards the *thrustings*, or white whey. The latter are more or less impregnated with salt. As soon as the principal part of the green whey is collected in the *set-pan*, a fire is lighted under it of Cannel coal, crop-wood, or other quick burning fuel. The remainder of the green whey is added after the fire is lighted. It is usual to skim off any small particles of curd which float on the whey, and give them to the poultry.—Whilst the whey is heating it is necessary that it should be frequently stirred, or it will be liable to burn to the bottom of the pan. When it has attained a heat of about 160° or 170°, if any whey is wanted for the family it is then taken out. When the whey has reached the heat of 180° it is in a fit state for *breaking*. This may be effected by any simple acid, but it is customary here to use sour buttermilk, and with it the *thrustings* of the previous day. The quantity of buttermilk necessary may be easily ascertained. I have only noted what was used in one instance, which was 1 pint of buttermilk and 2 quarts of thrustings, (which had been mixed the day previous to being used, and kept in a tolerably warm place to increase the acidity) to 22 gallons of whey. The *breaking* by this method, which is almost instantaneous, has the effect of causing all the creamy matter to rise to the surface, from which it is regularly skimmed off, and put into a cream-mug. The last skimmings are termed *fleetings*, and are generally reserved for the use of the servants. It is necessary, after the *breakings* are put in, to check or withdraw the fire, to prevent the whey from boiling. The refuse whey, after the cream is skimmed off, is ladled out of the pan for the use of the pigs; and it is generally conveyed by a spout fixed above the pan, which leads to a cistern or tub in which the pig-meat is kept.

The making of butter from *whey-cream* varies very little from the process of making butter from the cream of milk. The cream is kept for three or four days, or until it has become clotted (provincially termed *calved*.) Those who make the best whey-butter have a spigot and faucet to each of their cream-mugs to let off the whey, which in the course of a few hours settles at the bottom, and which, if allowed to remain, imparts a rank flavor to the cream, and consequently to the butter. The temperature of the cream, when put into the churn, is generally ascertained by the hand; but if a thermometer be used, the heat which I would recommend is 60°, having found that the best. If it be much *higher* than this, the butter may be expected not only to be soft, but inferior both in quantity and quality; and if much *lower*, the operation of churning will be prolonged, and indeed tedious. At this heat the time in churning will probably be about an hour and a-half. It will perhaps be necessary in cold weather to put hot water into the churn, and in warm weather to put in cold water, in order to attain this desirable object as to heat.

From 100 gallons of milk there will not be less than 90 of whey, which should yield from 10 to 12 gallons of cream, or 3½ to 4 pounds of butter. The quantity of whey-butter per cow is about half a pound per week, taking the season through; but with that small portion of cream of the evening's milk (to which I have alluded at p. 140) added, the farmer often churns as much as three-quarters of a pound of butter per cow per week, or from 20 to 25 lbs. per annum: 1 lb. of salt is sufficient for curing 37 lbs. of butter, if for present use.

CHEESE-COLORING.—This ingredient is or should be *annatto (or annotto)*, the produce of the *Bixa orellana* of Linnæus. It is, I believe, chiefly imported from the West India Islands, and used for dyeing. The coloring chiefly used in cheese-making is *prepared* by manufacturers in this country for the purpose. It gives the cheese that amber or cream-like appearance which is unfortunately required in order to *please* or *deceive* the eye of the London consumer. For the Manchester and Liverpool markets, and for *home* consumption, the Cheshire farmer rarely uses it in his cheese-making, as it is well known it does not improve, but if an inferior article is bought, and especially if much be used, it may deteriorate the flavor very much. Those who wish to be enlightened on this subject would do well to read the "Essay on Cheese-Coloring," written by Mr. Whitley of Stretton, published by Ridgway, in which it is clearly proved that the greatest bulk of the cheese-coloring used in this country is only an *imitation of annatto*, but sold by that name, and consisting of such ingredients as tumeric powder, potash, and soft soap or train oil, well mixed to form a mass along with a *little* "real Spanish annatto." I cannot, for two reasons, here resist inserting a verbatim copy of a paper which was printed and published several years ago by a cheese-factor in Cheshire: *first*, because it is an acknowledgment, on his part, that much bad coloring did then exist; and, *secondly*, because it contains 'A Word of Advice to the Dairy-maid,' which shows what were considered some of the defects of the dairy system at that time, and what in his opinion the remedies. Many dairy-maids even *now* would do well to attend to this latter advice.

"LOOK YOU HERE, AND BUY ——'S COLORING.—To all that may be concerned in making colored dairies of cheese, —— begs to inform the users of annatto, for the purpose of coloring, that he has for the last ten years felt sorry to his heart for great numbers of dairy-owners, to see such bad colored dairies as he in general has done, and the very great loss the owners thereof have annually met with on this account.

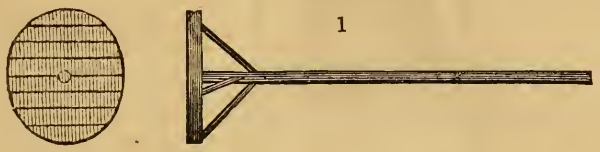
"—— having, therefore, been determined, for the farmers' interest, to use every influence possible with the manufacturers of this article to have the same genuine, which till lately has been to little purpose, as one-half they have in general sent out has proved to be far short of the color which the market requires, he has at last gained considerable information from sundry manufacturers; and he has now engaged a person that has been in the habit of making and seeing this *article made for the period of twenty years* and upwards, and as —— is now in the habit of seeing and hearing what other manufacturers have been and are doing, convinces him that farmers will still find themselves but little better off by following their old mode, he has determined to make the article of annatto in its genuine and original purity, and is now giving the public a favorable opportunity of having some of this very superior coloring, which, from its brilliant color, will recommend to the farmer a great variety of customers for their choicest dairies."

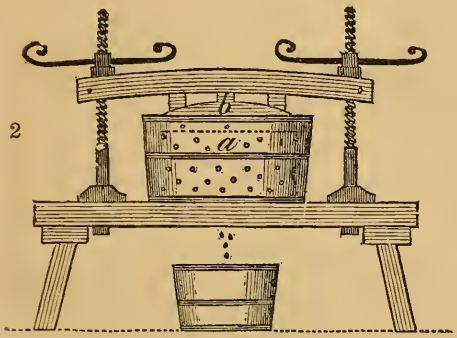
"A WORD OF ADVICE TO THE DAIRY-MAID.—Let your rennet or steep be put into your milk of a temperate heat or warmness. After the curd is formed, do not let any part of it be starved, or get any colder than your own hand.

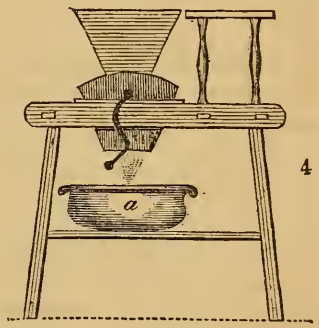
"All dairy-maids that would have real fine-flavored cheese would do well to thrust it with their hands, that there are no cold draughts from doors upon their curd, but keep it gradually warm, but not to scald it neither with water, whey, nor burning vats. Have your first press not too heavy, and in as moderate a warm place as you can possibly place it; study a warm salting-room; use neither flags nor slates for your cheese to lie on, but good planks; your drying-room to be moderately warm, and also your cheese-room; cold damp rooms, flags, or slates, will spoil the handiwork of the best dairy-maids; you should never suffer your cheese to be starved, or get into a cold damp state, as it very materially hurts the flavor.

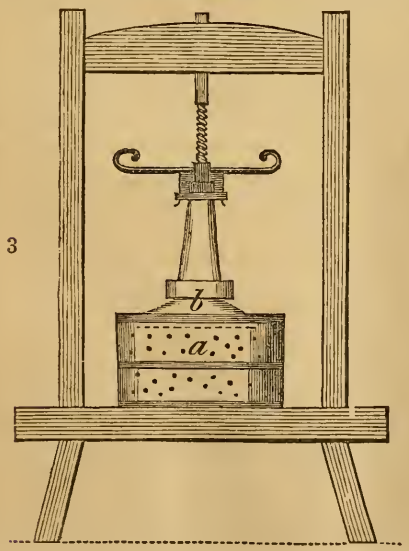
"Good calf-skins, or calves' bags, as are invariably made use of, are of serious consequence to the flavor and the coming of the cheese."

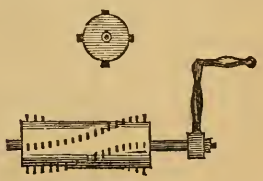
A Recipe for Curing the Maw-Skins.—Procure the skins fresh from the butcher the year previous to their being wanted; clean out the chyly matter, and every other apparent impurity; the inside is then turned outward on a table, and salted; the skins are then laid one upon another, with a layer of salt between each, in a deep earthenware vessel similar to a cream-mug; they are then covered over with salt, and have a lid of slate or flag placed on the top. They are taken out as wanted, about a month previous to being used, and the brine drained from them. They are then spread on a table, and fine salt is powdered on each side. In this state they are rolled with a paste-roller, distended with a splint of wood, and hung up to dry.

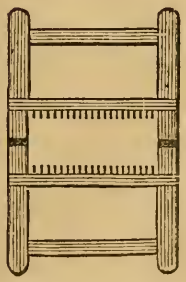


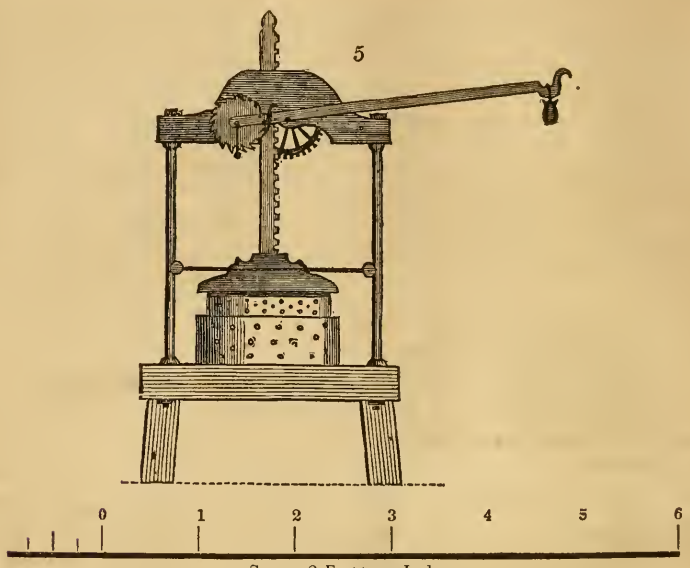












Scale, 2 Feet to an Inch.

THE AMERICAN CHEESE TRADE.

The export of cheese to Great Britain will this year reach 12,000,000 lbs., against 15,386,836 in 1848–49, being a decrease of one-fifth. Last year may be considered a maximum, *unless quality improves*, which, if it does, Great Britain could take double the quantity; as a proof of which, the consumption of foreign cheese there in 1831 was only 14,000,000 lbs., and in 1848 had increased to 48,000,000 lbs., being about 250 per cent.

The quality this season has shown an improvement, but only to a moderate extent; still there was great difficulty in getting a prime article, there being only about 10 per cent. strictly prime, and 20 per cent. fit for profitable shipment to England. However, we have great dependence upon American enterprise, and feel confident that American cheese, as a rule, will in a few years equal, if not surpass English. We would caution farmers to be careful and improve the quality, as they may depend upon it, that every year there will be a greater difference in price in favour of first class, and parties must get tired or unable to make shipments to incur a certain and increasing ratio of loss on inferior quality. The result of sales in England this year has proved that only first class has made a small profit, and that inferior has made a great loss; and we would suggest to careless dairymen and country buyers, that if they do not keep an eye to the quality, they will certainly find to their cost, instead of a ½ per cent. per lb., being the difference in price between inferior and prime, it will sink down from two to three cents., and be a drug at that.

We have been led to make these remarks as to quality, which may be thought by some too pertinent. The reasons are, at the opening of the trade, owing to the reduction of duty in England and wasteful consumption there, during the railway mania, the trade was profitable, and "all was fish that came to the net," so that in a scarce market an inferior article might pass; but now matters have changed, and the supply both of English and foreign cheese is fully as great as the demand, therefore we hesitate not in affirming, it is only by improving the quality, that the American cheese trade can last, thereby advancing the interest of all parties concerned.

Receipts of Cheese at tide-waters of the Hudson.		Cheese exported to Great Britain in years and seasons.		Cheese retained for Home Consumption.	
Seasons.	*Pounds.*	*Seasons.*	*Pounds.*	*Seasons.*	*Pounds.*
1834 . .	6,340,000	—— . .	——	1834 . .	6,340,000
1835 . .	9,586,000	—— . .	——	1835 . .	9,856,000
1836 . .	14,060,000	—— . .	——	1836 . .	14,060,000
1837 . .	15,560,000	—— . .	——	1837 . .	15,560,000
1838 . .	13,810,000	—— . .	——	1838 . .	13,810,000
1839 . .	14,530,000	—— . .	——	1839 . .	14,530,000
1840 . .	18,820,000	1840 . .	723,713	1840 . .	18,096,287
1841 . .	14,170,000	1841 . .	1,748,781	1841 . .	12,421,219
1842 . .	19,004,000	1842 . .	2,456,671	1842 . .	16,547,329
1843 . .	24,336,000	1843 . .	3,440,144	1843 . .	20,893,856
1844 . .	26,672,500	1844 . .	7,433,145	1844 . .	19,239,355
1845 . .	29,371,000	1845 . .	7,941,187	1845 . .	21,429,813
1846–7 .	34,812,513	1846–7 .	10,368,419	1846–7 .	24,444,094
1847–8 .	40,843,000	1847–8 .	10,550,230	1847–8 .	30,293,770
1848–9 .	43,278,526	1848–9 .	15,386,836	1848–9 .	27,891,690
1849–50 .	42,097,818	1849–50	11,921,875	1849–50 .	30,175,943

—*Messrs. Kemp & Co.'s Circular.*

PARING AND BURNING

Is a process much used in England for restoring old and foul land to cleanliness and fertility. In this country we have never seen it put in practice, except by Mr. Sotham, at Hereford Hall, near Albany. The operation is carried on with a facility and despatch that we should not have expected. and, as we are told, with results altogether satisfactory. We have seen so much land in similar condition, and therefore to all appearance inviting the application of the same process, that we have deemed it expedient to copy from Rev. W. L. Rham's Dictionary his description of the operation and its objects.

PARING AND BURNING.

This operation consists in cutting a thin slice from the surface of land which is overgrown with grass, heath, fern, or any other plants which form a sward by the matting together of their roots. The sods are allowed to dry in the sun to a certain degree, after which they are arranged in heaps, and burnt slowly, without flame or violent heat. The result is a mixture of burnt earth, charred vegetable fibre, and the ashes of that part which is entirely consumed.

The object of this operation is twofold: first, to kill insects and destroy useless or noxious weeds completely; and secondly, to obtain a powerful manure, impregnated with alkaline salts and carbonaceous matter, which experience has shown to be a very powerful promoter of vegetation.

The instruments by which this is effected are, either a common plow with a very flat share, which may be used when the surface is very level without being encumbered with stone or large roots, as in low, moist meadows; or, in most other cases, a paring-iron, which is used by hand. The crossbar of this instrument is held with both hands; and the upper parts of the thighs, being protected by two small slips of board, push the instrument into the ground, so as to cut a slice of the required thickness, which is then turned over by moving the cross-handle. The labor is severe, and a good workman can scarcely pare more than one-sixth of an acre in a day. The price of this work is from 15*s*. to 25*s*. per acre, according to the price of labor. The drying. burning, and spreading of the ashes are contracted for at from 10*s*. to 15*s*., or more; thus the whole cost is from 25*s*. to £2 per acre. In France it is done by a *cob*, which is like a shipwright's adze, and the operation is called *écobuer*.

Paring and burning the surface is an almost invariable preliminary in the converting of waste lands to tillage; and where these lands are in a state of nature, overrun with wild plants which cannot be easily brought to decay by simply burying them in the ground, burning is the readiest and most effectual mode of destroying them. In this case the practice is universally recommended and approved of.

But it is not only in the reclaiming of waste lands, and bringing them into cultivation, that paring and burning the surface is practised. The fertility produced by the ashes, which is proved by the luxuriance of the vegetation in the first crop, has induced many to repeat this process so often as materially to exhaust the soil, and induce partial sterility. Hence the practice has been recommended on the one hand, and strongly reprobated on the other.

When we come to apply to the subject the test of experience, and reason correctly on the facts which are presented to us by the abettors of the practice and its adversaries, we shall find that the advantages and disadvantages arise chiefly from the circumstances under which the

operation is carried on. But it may be necessary to an impartial examination of the subject, to inquire into the changes produced on the substances subjected to the process of burning, when it is done with due precautions.

In burning vegetable matter in an open fire, the whole of the carbon is converted into carbonic acid and flies off, leaving only some light ashes containing the earthy matter and the salts which the fire could not dissipate. These are no doubt very powerful agents in promoting vegetation, when they are added to any soil; but they are obtained at a very great expense of vegetable matter, which, by its decomposition in the earth, might also have afforded food for vegetation. If the earth which is burnt with the sods is of a cold clayey nature, the fire will change it into a kind of sand, or brick-dust, which is insoluble in water, and corrects the too great tenacity of clays, by converting them more or less into loams. This is so well known that clay is often dug out of the subsoil to be partially burnt. On stiff clay soils, therefore, there is a double advantage in paring and burning, that of the vegetable ashes and of the burnt clay. When the fire is so managed that the vegetable matter is only partially burnt, the oily and inflammable portions being converted into vapor by the fire without being destroyed, and absorbed by the earth, the effect produced is only to impregnate the earth with minute particles of matter, readily converted into the constituent parts of vegetables. The earth is the mere recipient of these particles, which are held in its pores, as water is in a sponge, ready to be let loose to any substance which has the power of attracting them. The moisture, which the dry earth will also absorb from the atmosphere if no rain should fall, is retained and increased by the effect of the salts with which it is impregnated. It is uniformly observed that turnip-seed, which in most soils will not vegetate without heavy dews or rains, if sown in dry weather, scarcely ever fails to spring up in the ashes of a soil that has been pared and burnt. May not this be ascribed to these particles, which have been taken up by the earth in the operation of slow combustion, absorbing moisture from the air, and giving it out to the seed which has been sown? It does this better than a heavy shower would: a heavy shower soaks the ground for a short time, and swells the seed: but, if it be succeeded by a hot sun, the water evaporates so rapidly that the seed loses its moisture, and vegetation stops. The earth, which attracts moisture from the air, keeps it, its absorbent nature preventing the evaporation; and it furnishes it gradually to the vegetating seed as it is required. The wonderful effect of peat-ashes on young clover may be explained on the same principle, and probably also that of gypsum. There can be no doubt, then, that considerable advantages may result from the operation of paring and burning the surface of clays. But what is lost and destroyed in the operation? All that escapes in the shape of gas or vavor. The gas will probably be carbonic acid; for this is formed by the combustion of charcoal. We know that hot lime has a very strong attraction for this substance, which it fixes in a solid state, becoming a carbonate of lime; and we have no reason to think that it parts with it to the roots of plants But other earths may absorb carbonic acid, without having so great an attraction for it, and let it loose to water, with which it is known to combine in certain proportions, and to be thus carried into the vessels of growing plants by the attraction of the roots. If this should prove to be the case, we may account for the great effect of burnt sods in promoting vegetation.

The principal objection to burning is, that it destroys a great portion of vegetable matter. But this is a fact to be proved, and is perhaps rashly taken for granted. When vegetable matter decays in the earth, it loses much of its substance, which is converted into volatile matter, and flies off into the atmosphere. It is possible that thus more is lost during the time that the slow decay goes on, than even in burning with due precautions. This is a fact which may be difficult to ascertain; but it is not impossible; and therefore the assumption of the contrary requires to be founded on some proof or experiment. The earthy portion of the soil may be diminished by driving out the water which it held, as is manifest in burning clay, and it shrinks into a smaller space; but there is as much earthy substance as before, and this substance is improved by the burning. It appears, then, that a clay soil may be pared and burnt, without its real substance being diminished; and if its texture is improved, it becomes more fertile by the operation.

Burning clay soils is in fact something analogous to liming. Lime dissolves the vegetable matter, and enables its elements to enter into new combinations; but if no new vegetable matter be added to restore what is exhausted by vegetation, liming, as well as paring and burning, is detrimental in the end. Many experienced farmers pare and burn the soil on the edges of their ditches and on the banks on which the hedges grow, because they thereby exterminate many rank weeds; and the burnt earth mixed with farm-yard dung makes an admirable compost. Here the burnt earth acts as an absorbent, and no doubt attracts many of the volatile parts of the manure, which are produced by the decomposition of animal and vegetable matter in it. Paring and burning, therefore, should be joined to manuring, if a powerful and immediate effect is desired without exhausting the soil; and in this case we do not hesitate to recommend it on all cold clay soils where rank weeds are apt to spring up, and coarse grasses take the place of the better sorts which have been sown. The proper time to pare and burn is evidently after the land has lain in grass for several years, and is broken up for tillage. The surface should be pared thin; about two inches is the extreme thickness allowable for the sod if the soil is very stiff and poor, and as thin as possible in a better soil. It should be done with a breast-plow or paring-iron by manual labor. The sods should be moderately dried, and then arranged into small heaps with a hollow in the middle to hold heath or bushes to kindle the fire. When it has fairly established itself, all the apertures should be carefully closed. Wherever any smoke breaks out, a fresh sod should be immediately put over it; a heap containing a small cart-load of sods should be smouldering for several days without going out, even if it rains hard. If the fire is too brisk, the earth will form hard lumps, and even vitrify; but otherwise it comes out in the form of a fine powder, in which evident marks of charcoal appear. If this is of a fine red color, it is a good sign; for the iron in the earth has been converted into a peroxide, which is perfectly innocent in its effects on vegetation;

whereas all the saline impregnations of iron are more or less hurtful. It is better to burn the sods in large than in small heaps; for the more the fire is smothered, the better the ashes.

So great a quantity of ashes is sometimes produced as to admit of a portion being carried off on grass land, or used to manure another field for turnips. As this is evidently robbing the field where the operation has been carried on, an equivalent quantity of manure should be brought in exchange. Perhaps the most advantageous mode of using the ashes is to spread them in the drills where the turnip-seed is to be sown, after a portion of dung has been buried under them. In this manner the ashes from one acre of land pared and burnt, together with ten or twelve cart-loads of good yard dung, will manure two acres, and all the manure of one acre, in the ordinary mode of raising turnips on ridges, will be saved. If the ashes will produce as good turnips with half the usual quantity of dung, the expense of paring and burning is amply repaid. But experience proves that the earth and ashes almost ensure a good crop of turnips in many poor stiff soils in which they would probably not have succeeded if sown in the common course of cultivation without bones or ashes.

When a considerable extent of poor land is brought into cultivation, and there is no sufficient supply of manure at hand, paring and burning a portion of the land every year, by which a crop of turnips is obtained, is a most effectual means of improvement. Lime may be used at the same time with the ashes, and will increase their effect, provided some vegetable undecayed matter remains in the soil after paring; but lime will tend to exhaust this; and if, in consequence of liming, a few good crops of corn are obtained at first, the soil will be so exhausted as to be of little value afterwards. This is the abuse of the practice which has caused it to come into disrepute. It would be a great waste to burn the surface of a rich piece of grass land where the plants growing in it are tender and succulent, and would readily rot on being plowed under; in such case a moderate application of lime would have a much better effect. This kind of land will produce good crops without any manure, and continue fertile for many years if judiciously cultivated. To pare and burn rich land is wasteful, and can never be recommended. It is only on poor land which has not strength to produce a crop, and of which the texture requires to be improved and its powers stimulated, that paring and burning is advantageous; on poor, thin, chalky soils that have been laid down with sainfoin, of which the roots and stems are grown coarse and hard, so as not readily to rot in the ground, the operation is proper and advantageous. The turnips produced by the ashes, with or without the assistance of dung, must be fed off by sheep folded on the land, whose dung and urine will enrich it, and their tread consolidate it. By this mode of proceeding great advantages are obtained from paring and burning, and the land, so far from being deteriorated, will be improved.

Many landlords rigidly forbid their tenants to pare or burn any part of their land, from an idea that the heart of it is destroyed by the burning. If they would would only insist on a certain quantity of dung being put on, either at the same time that the land is thus treated, or for the next crop, and prohibit the sowing of corn crops except after turnips, clover, or some other green crop consumed on the farm, there would be little danger of any detriment to the land, even if it were pared and burnt once in every ten or twelve years, provided it were judiciously treated in the intervals. The farmer would be benefited in many situations, and the practice would tend to keep up the value of the farms.

In Devonshire, where the land has been pared and burnt from time immemorial, even where the soil is rich, the practice has been often resorted to without any judgment. Provided a crop of corn or potatoes was obtained at little cost, the consequences to the future state of the land were not heeded; and landlords, seeing their farms impoverished, put a stop to the practice. Thus many useful modes of cultivation have been reprobated from the abuse of them, which, properly applied, would have been advantageous to all parties. There is no maxim more true than this; that whatever injures the landlord, injures the farmer who is not desirous of removing, and *vice versâ*; and all restrictions on cultivation, however necessary when there is a fear of dishonest conduct, diminish the value of a farm and lessen the rent which can be fairly afforded for it. Ignorance is often a greater destroyer of the interest of both landlord and tenant than wilful dishonesty; and the spreading of useful information among tenants, so that they may see their own advantage, is the surest means of improving landed property. Many tracts of waste land might be brought into cultivation by means of paring and burning, which without it would never repay the labor required. Where the soil is inclined to peat, this operation and abundant liming are the indispensable preliminaries of cultivation. The ashes and the lime will produce vegetation and food for animals. These will produce dung to supply what the vegetation abstracts, and to assist also in the farther decomposition of the peaty matter, converting it into vegetable mould.

The first crop after paring and burning, as was observed before, should, if possible, be turnips, and these should be consumed on the spot; but there are exceptions to the rule. The soil may be a stiff clay of a considerable degree of natural fertility, only encumbered with rank weeds and grasses. In this case the surface is burnt to destroy these, and a crop of corn may safely be taken after the paring and burning, the land coming into a regular alternate rotation after it. For example, the next crop may be beans or tares, with a good proportion of dung; or clover may be sown with the first crop, if the ground appears fit for it. The effect of the ashes will be readily perceived in the luxuriance of the clover. Such land may be afterwards cultivated, according to its nature and quality, with the rest of the farm; or laid down to grass after a course of cleansing and ameliorating crops.—Thus old wet meadows, after having been well underdrained, may be greatly improved, and either converted into arable fields or laid down again with choice grasses.

Old rough pastures may often be greatly improved by a very thin paring and burning, so as not to destroy all the roots of the grass. When the ashes are spread over the pared surface, some good grass-seeds are sown with them The whole is well harrowed or scarified and rolled, and the grass which will spring up after this will be greatly improved, and will fully repay the expense of this simple mode of renovating it. This is the cheapest mode of improving coarse pastures that we know, without breaking them up.

The partial paring and burning of the headlands of fields, for the purpose of mixing the ashes and burnt earth with dung in a compost, is a most excellent practice, and often superior to that of using the sods only, without burning them. These sods contain innumerable seeds of weeds, and eggs or maggots of insects, which are not destroyed by the fermentation of the heap, but, on the contrary, are brought to life. The loss of a portion of vegetable matter in the burning is amply compensated by the destruction of these enemies of the future crops.

It now only remains to take notice of the soils and situations where paring and burning cannot be recommended. Wherever the soil is very loose from a great proportion of silicious sand in its composition, and is held together chiefly by the slender roots which run through it, the burning would destroy the whole of the vegetable matter; for none of the volatile parts which the fire dissipates or generates would be retained or absorbed, but would pass through the loose saud in the same way that water would. Here then would be actual destruction; and the residue would be a mere barren silicious sand, much worse and more porous than it was when held together by the roots. The only way to bring such soils into cultivation is to put clay or marl on them, and to force vegetation by means of liquid manures, chiefly the urine of animals, consolidating them by every means applicable, so that they may retain moisture, and that the manure may not be washed through by the rains. Such soils may be improved, but they are the most ungrateful of any; and it is only necessity and indefatigable industry which can make them produce any crops.

It is very easy to ascertain whether any soil will be improved or not by paring and burning. A few sods may be taken and exposed to heat in an iron pot closely covered over, or in a large crucible: the heat should not be so great as to produce light, but should be kept up for a considerable time, till the sods are consumed. If the ashes are red, and the whole is a fine powder, with particles of charcoal in it, the soil from which it was taken may be safely pared and burnt, especially if it forms a mud with water, and the earth is not readily deposited. But if it feels gritty, lets the water readily through, and is soon deposited when mixed with it, burning will not be advantageous. This is the evident result of the principles laid down before.

On the whole, the operation of paring and burning, when judiciously applied and properly performed, is a most excellent and cheap improvement of certain soils, and it will never diminish their fertility, if they are properly cultivated and manured, and a judicious succession of crops is adopted; but on the contrary it will improve their quality and texture, and make them more productive.

Consumption in Horses.—Mr. Percivall, the great English veterinarian, says that "*pulmonary disorders carry off more horses than all other diseases.*" Though this is probably an over-estimate of mortality from that source, when we consider how much sudden changes of temperature and checked perspiration injure man, why may we not suppose that many horses are killed by it; and hence we should perceive and act upon the propriety of attending more to the condition of the horse when turned out, or otherwise exposed to sudden change from heat to cold. The Spaniards have a saying that a *draft* of air "that will blow out a candle will kill a man;" but we think nothing of putting a horse however much heated into a stable with a draft of cold air coming on him from without. It is said not to be unusual in England for a farmer to have to re-stock his farm with horses three times pending a 19 years' lease. Is not our climate liable to greater and more sudden changes than that of England? Has any one calculated how often his stock of horses is renewed in 20 years? We once heard a man in Baltimore who keeps accounts of expenses even to a fip for ginger-cakes, say that to keep a carriage and horses in that city for a series of years, including wear and tear of every sort, costs $1000 one year with another. Is it so! he belongs to what is called the *haut ton*, if we have any such ton in our country. We have enough to ape the *haut ton* of Europe as near as they can conceive and come up to it.

The St. Bernard Dog.—This is a variety nearly allied to the Newfoundland breed, has been trained by the benevolent monks of the convent near the top of the mountain of Great St. Bernard, to hunt out and extricate such unfortunate travellers as may have been buried under the snow drifts or avalanches while attempting the neighbouring dangerous pass between Switzerland and Savoy. One of these noble animals was decorated with a medal, in consequence of his having saved at different times the lives of twenty-two persons, who must otherwise have perished. In the museum of Berne is still preserved the stuffed skin of "Barry," another of these dogs, together with the bottle and collar which he bore in his lifetime; for the good fathers, with a provident care to afford every chance of escape to the unfortunate travellers, fasten a flask of spirits about the neck of the dog before he starts on his search. Barry having discovered a boy whose mother had been destroyed by an avalanche, unhurt and asleep in the hollow of a glacier, and almost stiff with cold, delivered to him the bottle suspended from his neck; and when the boy had refreshed himself, he found means to persuade and prevail with him to mount on his back, and thus carried the little fellow to the gates of the convent. This dog had been the means of rescuing from death upwards of forty persons before he was superannuated; when he was sent to pass the remainder of his days on a pension in a more genial climate.

Another letter from H. C. CAREY *to a distinguished patriot of the South, on the true sources of—and the remedy for—the existing discord between the North and the South; and how they involve the interests of Agriculture. Written for* "THE PLOUGH, THE LOOM, AND THE ANVIL."

PHILADELPHIA, *July* 4, 1850.

DEAR SIR—There are two diseases raging in the Union—Anti-slavery and Pro-slavery—and from the latter you are, I think, by no means entirely free, for which reason, perhaps, it is that you doubt the accuracy of my views in regard to the causes of the former. I propose now to furnish you a sketch of the causes of your own complaint, with a view to indicate the remedy, believing that you may be satisfied that *both owe their existence to the same error of commercial policy*, and that the same remedial measures will eradicate both, to the great advantage of ourselves, and of the Union in which it is our fortune to live.

Sixty years since, the South united with the North in prohibiting the introduction of slavery into the North-Western Territory. Little more than forty years since, southern men united with northern men in rejecting the application of Indiana to be exempted from the operation of the Ordinance of 1787. Twenty years since, Maryland, Virginia, and Kentucky, were almost prepared for measures looking to the abolition of slavery within their limits, and it was the almost universal belief throughout those States, that gradual abolition was indispensable to their progress in population, wealth, and happiness. Since then, a change, and a most remarkable one, has "come over the face of the southern dream," and it has been discovered that slavery is "a blessing" instead of being a curse, as it was held to be by Washington, Jefferson, Madison, and most if not all of their contemporaries, men perhaps quite as well qualified to form a correct judgment in regard thereto as are any of their descendants. It has also been discovered that the wealth of slave States grows more rapidly than does that of free ones, and that true policy on the part of the latter would lead them to reduce the labouring classes to a state of slavery. Further, it has been *proved* that one of the great objects of certain provisions of the Constitution, was the maintenance of an "equilibrium" between the free and the slave States, and that the ordinance of '87 was "an act of aggression" upon the South, which otherwise would have secured to slavery, and to itself, a portion of the fertile region north of the Ohio, in which "the domestic institution" would have continued to exist side by side with those of the numerous immigrants from the free States, and from Europe, that would have flocked to this northern branch of the southern tree. Extraordinary as is this idea, it is but one of many almost equally so that have been brought out in the long course of pro-slavery agitation, and brought out, too, by men who profess to be disciples of Adam Smith! The answer to the theory of "equilibrium" might be found in the fact, that the effort in 1812, to extend the area of free soil, by incorporating Canadian States within the Union, *was a Southern measure.*

There has thus been a total revolution of the southern feeling on this subject, and it dates back less than twenty years. Were we to look for the cause of this to any mere change of moral feeling, we should err as widely as we should do were we to ascribe the northern agitation in regard to free-soil to an increased conviction of the sinfulness of slavery, and an increased belief that duty to his God required interference on the part of the northern man

with the rights of property of his southern neighbour. The man of the North who denounces slavery as a crime and the slave-holder as a criminal, is not more moral than were thousands of his predecessors who owned slaves and felt that in so doing they were guilty of no crime; nor is the man of the South who regards slavery as "a blessing" less moral than were thousands of his predecessors who regarded it as a blight, and held it to be the duty of all good citizens to exert themselves for its extinction. What, then *is* the cause of this extraordinary change? Why is it that people who but twenty years since were so nearly united in opinion are now so widely separated? Why is it that the cause of emancipation goes backward in the South, as abolitionism and free-soilism go forward in the North? This is a question of great interest, and I will endeavour to answer it, but to do so satisfactorily it will be necessary to show what are the circumstances that in other countries have marked the progress of man from slavery to freedom, or from freedom to a state of slavery.

In all those countries in which men have become free, we see that freedom has come with increased density of population and increased value of land, the owners of which, as a body, have become more rich as its occupants became more free, and as their lands became more and more divided. If we desire evidence of this we may look to the steady growth, for centuries, of value in the land of England, accompanied by increased freedom of the people employed in its cultivation: or to Belgium, where the freest people of continental Europe pay, as annual rent for the use of flax land, ten times as much as would purchase the fee of an acre of good cotton land in Alabama —or to France, where land increases steadily in value as man becomes more free—or, in fact, to any part of the world in which the value of land is increasing, or where it has at any time increased. *The prosperity of the landholder is, therefore, inseparably connected with the growing freedom of the labourer.*

If, on the contrary, we look to those countries in which land diminishes in value, we shall see population diminishing, land accumulating in fewer hands, the landholder becoming poor, and its cultivator becoming less free. For proof of this, we need only look to history for the course of things in Egypt, Greece, and Italy, or to the newspapers for that in Ireland, where the landholder becomes pauperized as the labourer becomes enslaved.

Why this is and *must* be so may readily be explained. In order that land may increase in value there must be increase in the quantity of its products, and in their exchangeable value, and that such increase may take place there must be increase of population, which cannot be the case when all are engaged in agriculture. That such increase may take place the consumer must take his place by the side of the producer. The farmer who is obliged to take his corn to distant markets exhausts his land, and is then obliged to fly to lands still more distant from market, and the exchangeable value of his products diminishes; whereas, he who has a market at his door improves his land, and obtains a constantly increasing return to labour, and the value of his products in exchange for other commodities is constantly increasing, and labour yields, therefore, a constantly increasing return of the necessaries, comforts, and luxuries of life. The one obtains small crops of corn, which he sells at 15 or 20 cents a bushel. The other obtains large crops, and sells at 60 or 70 cents. The cost to the latter of raising a slave would be so great that it would never be repaid, whereas to the former it would be so small that he could afford to raise slaves for sale, and thus the necessary consequence of increase in the quantity and value of the products of the earth, and increase in the value of land—the *immovable* property—is a diminution in the exchangeable value of the slave—the *movable* property—and

therefore it is that with the increasing productiveness of labour, and value of land, the involuntary labourer passes gradually into the voluntary one, the slave becoming free as the master becomes rich.

With every step in the contrary direction the reverse is the case. The man who has exhausted his land abandons it to seek for other land to be again exhausted. He attaches no value to the *immovable* property, but he values greatly that which is *movable*—his slave—and the more distant he is from market the lower will be the exchangeable value of his products, and the less will be the cost of raising slaves. Depopulation, diminished productiveness of labour, poverty, and pro-slavery go therefore hand in hand with each other, while with every step in the increase of population and wealth there must be a growing tendency towards freedom. In the one case slavery will be regarded as "a blessing," while in the other it will be deemed to be a blight, if not a curse.

The careful students of the *Wealth of Nations*, of whom, however, the number is very small, do not need to be told that these views are in perfect accordance with those of its illustrious author, who looked with great affection on the small proprietor cultivating his own land, and on the sturdy yeoman in the enjoyment of the independence and respectability that he saw were naturally consequent upon increased productiveness of agriculture, resulting from the combined exertions of artisans and agriculturists, any interference with which he denounced as "a manifest violation of the most sacred rights of mankind." It was the perfect knowledge that he possessed of the fact that diversity of employment was indispensable to the growth of agriculture that led him to reprobate, as "only fit for a nation of shopkeepers," the system which had for its object that of compelling all the nations of the world to make their exchanges in British markets. He saw clearly that with increase in the proportion of mechanics to agriculturists there was a great increase in the domestic market, with diminished *necessity* for resorting to distant ones, while *the power* there to go was constantly increasing, because the workman who ate the food converted the wool into cloth and fitted it to be cheaply transported—and therefore it was that he regarded every measure tending to prevent increase in the ratio of mechanics to agriculturists as "a great discouragement of agriculture," and every one tending to compel the foreign agriculturist to dispense with the proximity of the artisan as a violation of man's most "sacred rights."

His system and that of the South are the antipodes of each other. The one looks to bringing the consumer to the side of the producer, increasing population, augmenting the value of land, and increasing the freedom of man, with constant increase in the *power* to trade. It is anti-slavery in all its tendencies. The other looks to separating the consumer from the producer, dispersing population, diminishing the value of land and the freedom of man, with constant increase in the *necessity* for trade, and diminution of the power to trade. It is pro-slavery in all its tendencies, because of its most exhausting character. Instead of encouraging the mechanic to come and settle near them, bringing the market to their doors, and enabling them to improve their land, the people of the South have kept him at a distance, and have compelled themselves to seek distant markets, and their lands have been exhausted, the consequence of which has been a necessity for seeking other lands; and therefore it is that the *movable* property—the slave—has tended to rise in their estimation as compared with the *immovable* property—the land: the strongest evidence that could be given of the suicidal character of Southern policy.

How it has operated upon the older Southern States, up to the date of the last census, may be seen from the following table, in which is given in thousands, the movement of their population:—

	1790.	1800.	1810.	1820.	1830.	1840.
Maryland, . . .	319	341	380	407	447	470
Virginia, . . .	748	880	974	1065	1211	1239
North Carolina, . .	393	478	555	638	737	753
South Carolina, . .	249	345	415	502	581	594
. .	1,709	2,044	2,324	2,612	2,976	3,056
Per centage of increase,		20	14	12½	14	3

We here see that those States continued to grow in wealth and population up to the period of the census of 1830, and up to that period there existed no abolitionism—no free soil party—nor had the mass of the people of the South the remotest idea that slavery was other than a blight. The following decennial period is marked by the flight of nearly the whole annual growth of the population of those States, and with that flight came pro-slavery, necessarily followed by Northern agitation, because it was a consequence of the adoption of a policy directly opposed to their best interests. The Nashville Convention dates anti-slavery agitation back to 1834, and it was exactly at that period that the institution of domestic slavery began to be lauded as "a blessing." We see thus that an increased tendency to the dispersion of southern population, pro-slavery, and abolition, came into existence almost at one and the same time, and that the two latter were a necessary consequence of the former. If, then, we can ascertain the cause of that tendency to dispersion, we shall be at little loss to determine why it is that public opinion in the two sections of the Union has been so rapidly moving in opposite directions, until at length we have arrived at a point that seems almost to forbid a settlement.

Up to 1824, the political economy of Adam Smith—that which regarded the separation of the mechanic and agriculturist as being in a high degree detrimental to the progress of agriculture—was held to be democratic policy, and the opposition to it was deemed anti-democratic. The tariff of that year received but five votes in the four States of Maine, New Hampshire, Massachusetts, and Rhode Island. That of 1828 received but little more than one-third of the votes of New England, while the opinion of Mr. Madison in favour both of the *right* and the *expediency* of legislation with a view to protection, was then recorded in his letters to Judge Cabell. Such likewise was the opinion of General Jackson, and so long as democracy and protection were held to be consistent with each other—and the tendency of measures was consequently in that direction—there existed comparatively little tendency to the dispersion of southern population, and neither anti-slavery nor pro-slavery was heard of. Agitation on the subject was unknown.

The year 1832 brought with it nullification, and at the instance of South Carolina the policy of the Union was changed. From that year rail-road iron was free of all duty, the iron manufacture was prostrated, and the progress of other manufactures gradually diminished, until at length it ceased. Almost the whole energies of the nation were devoted to making roads by which to enable the farmer *to go* to market, and to enable his customers to fly to the West, there to become his rivals, instead of building mills and furnaces by means of which the market should be made *to come* to him. Dispersion was the order of the day. The slave population was scattered over the whole South, and the free population scattered throughout the West, with constantly increasing necessity for roads, and a constantly increasing diminution in the power to labour with advantage, the result of which was seen in the total prostration of 1842. Examine these facts and satisfy yourself, as I think you can, that diminution in the value of the land of the older southern States, and consequently in the wealth of their people, has kept steady pace with the growth of pro-slavery, and that both owe their existence to the abandonment of the

policy advocated by Adam Smith and his followers, Jefferson and Madison, which looked to placing the mechanic by the side of the food, thus diminishing the cost of transportation and increasing the power to maintain trade.

In 1820, the population of the States south of Virginia and Kentucky, including all those in which cotton is grown, was 2,300,000. In the ensuing ten years, it increased about 900,000, while the older Southern States, Maryland, Virginia, and the two Carolinas, increased about 600,000, and thus the proportions of all were fairly maintained. In the following ten years, the desertion of the older States became so complete that their growth was but 80,000, while that of the States south and west was a million, and the result was that the year 1840 exhibited the extraordinary spectacle of a population little larger than that of New York and Pennsylvania combined, occupying the whole country south of Virginia and Kentucky, with an area of about half a million of square miles, being almost five times as great as the area of those States, and yet so anxious after territory that they were ready almost to go to war for the purpose of securing Texas. The census now about to be taken will exhibit still more extraordinary results, for it will give a population not greatly exceeding that of those two States occupying not only that half million of square miles, but Texas and its immense surface in addition, and yet so anxious for further territory as to be grasping after California, and ready almost to go to war with the rest of the Union for a part of New Mexico, and with each and every step in the progress of depopulation, slavery is held, and necessarily held, to be more and more "a blessing."

Maryland, Virginia, North Carolina, Kentucky, and Tennessee, grow chiefly food, and the men who mine coal, and make cloth and iron, are consumers of food. The closing of the iron works of Pennsylvania and Virginia, and of the North generally, and the total stoppage in the progress of manufactures throughout the Union, tended to diminish the number of consumers of food, and to compel the makers of cloth and iron to disperse themselves over the west, that they might there become producers of food, the necessary consequence of which was a diminution of demand for the products of the Northern slave States, followed by a tendency to abandon the land and remove further south, there to cultivate cotton. The closing of northern mills and furnaces tended therefore to increase the number of cotton producers, and to diminish the number and the power of cotton consumers, and to render the South more completely dependent on Great Britain for a market in which to sell cotton, and to buy cloth and iron, and with each and every year its people have been giving more and receiving less in exchange, with a tendency to further exhaustion, impoverishment, and dispersion, followed by an increase in the pro-slavery feeling. What have been the results, as shown in the value of cotton compared with that of cloth and iron, I will now show.

	1815 to 1817	1827–1834	1845–1846.
Cotton consumed in England, lbs.	100,000,000	275,000,000	596,000,000
Value,	£8,000,000	9,000,000	11,400,000

She pays for this in cotton-cloth and iron, the prices of which, at these periods, were as follows:—

A piece of calico, of 24 yards	16|6*	7|6†	6|7
A ton of merchant-bar iron	£11‡	£7 5	£9 10

* McCulloch's Statistics, Vol. II. p. 70.

† This is the average of the years from 1831 to 1834, as given in Burns's Commercial Glance, and copied in the Merchants' Magazine, Vol. XIX. p. 277.

‡ Average of 1817 to 1819—Merchants' Magazine, Vol. XX. p. 337.

Had the whole been paid in these, the planter would have received of

Cloth, pieces	9,700,000	24,000,000	34,700,000
Or iron, tons	730,000	1,250,000	1,200,000

The *additional* freight, home and foreign, charges, commissions, &c., in the last period were, at three cents per pound, on 496,000,000 of pounds, say $15,000,000. For this the planter would receive, *in Liverpool*, 470,000 *additional* tons of iron, the value of which, in Liverpool, at the present moment, would be about $11,000,000, and thus he not only gave away his cotton, but gave with it a large portion of the cost of transportation. *The whole return to him for* 600,000,000 *was not as great as it had been for* 100,000,000.

It thus appears that notwithstanding all the improvements in manufacture, the planter had to give in the last period *six times* the quantity of cotton to obtain *three and a half times* the cloth that he could have had in the first—and *six times* as much to obtain a *smaller quantity* of iron.

The tobacco trade shows precisely similar results. In 1822, we exported 83,000 hogsheads, and the price was $74 82, yielding about $6,200,000. In 1845, we exported 147,000 hogsheads, and the price was $50, yielding $7,350,000. Deducting the extra expense of transportation to the place of shipment, the producers received less for the large quantity than they had done for the small one. From 1830 to 1835, the export averaged 90,000, and the amount was $6,200,000, yielding to the producer, on his plantation, as much as the larger quantity in 1845. The sum of $6,200,000, at these two periods, would have bought in Liverpool:—

1830 to 1835,	pieces of cloth,	3,300,000,	or tons of iron,	200,000
1845,	"	"	3,900,000	"	130,000

The planter is giving almost two-thirds more of tobacco for twenty per cent. more cloth, although his brother planter is almost ruined by the low price of cotton; but in the case of iron it is worse, for he gives two-thirds *more* for thirty-five per cent. *less*, and this result is the natural consequence of Southern commercial policy. With every increase in the tendency to found, or to occupy, new States, the exchangeable value of Southern products must diminish in its ratio to population, and the pro-slavery feeling must increase.

It is usual to attribute the fall in the price of cotton to too rapid an increase in the *production*, but the real cause is that *Southern policy has prevented increase of consumption*, because it has tended greatly to diminish the power to produce commodities to be given in exchange for it. The quantity of cotton produced has done little more than keep pace with the increase in the population of the States in which it is grown. Twenty years since the latter was 3,200,000, and the production was almost 400,000,000 of pounds. Now, the occupants of those States must number about five millions, and the average crop of the last five years is scarcely more than 800,000,000 of pounds. The growth of production has thus been slow. If next we compare the prices obtained in the ports, at the different periods, and set off against them the extra transportation incident to the occupation of so vast a surface by a small population, we shall be compelled to arrive at the conclusion that the return to labour, per head, is far less than it was twenty years since, and thus that dispersion, diminished value of land, poverty, and pro-slavery have come together, and that necessarily. The remedy for all is to be found in the adoption of a policy that will bring the consumer to the side of the producer, and enable the landholder to grow rich as his slaves become more free. That done, pro-slavery and anti-slavery agitation will pass away, as they came—together.

How essential to the South is a change of policy will, I think, become obvious to you on a retrospect of the proceedings of the last twenty years. It was

in 1821 that it extended its area by the purchase of Florida. From 1835 to 1840 it was proposed to incorporate Texas, but the proposition was repeatedly declined. A treaty for that purpose was then made, but it was rejected by the Senate. Finding that constitutional measures would not accomplish the object, unconstitutional ones were resorted to, and Texas was admitted by a mere majority, and to this the North submitted. War was then made on Mexico—a Southern measure, having for its object the acquisition of more slave territory. California was bought. All of these were pro-slavery measures. During all this time the North made no effort to annex Canada, but had it done so, and had it pursued the same course as was pursued in relation to Texas, what would the South have said and done? Would it not have threatened resistance and dissolution? Would its members not have banded together with a determination to stop all legislation? What did the North do? Nothing! With the single exception of the proposal to prevent slavery from passing its present limits, a *defensive* measure, nothing has been done or attempted to be done during all the period in which the South has been thus engaged in *offensive* measures, for the forcible acquisition of territory to be used for the accomplishment of Southern objects. Northern members have never banded themselves together to stop all legislation even when intended exclusively for the promotion of southern objects deemed most likely to be injurious to northern interests. Nevertheless the South complains unceasingly of "aggressions," and it does so because its whole policy tends to weaken itself, as further continuance in the same direction must continue to do. The more territory it obtains, and the more it is allowed to pursue its own course in the acquisition of territory for the accomplishment of southern objects, the louder are the complaints against the North, *which has never bought a foot of territory, nor sought to obtain one by any other course than that of its peaceful occupation.*

We see thus that with every step in the progress of depopulation, impoverishment, and weakness, pro-slavery grows, and the measures proposed for the maintenance of "the domestic institution" become more and more dangerous to the Union *and to itself.* It is now deemed necessary to annex Cuba, and the present year has seen no less than two expeditions for that purpose, both patronized by the South, and the latter of them defended even on the floor of the Senate. Now, if there be any one measure better calculated than any other that could be devised for weakening and impoverishing the South, it would be the annexation, even if peaceably accomplished, of Cuba. Nothing has thus far saved the cotton planter from ruin, but the withdrawal of part of the population to be applied to the sugar-culture, which would perish at once were Cuba admitted into the Union, and then the force now employed in producing sugar would have to return to cotton, although the cotton planter is now saved from ruin by nothing but an occasional short crop. *The pro-slavery feeling, however, overrides all prudential considerations,* and the probability is, that we shall see a revolution in Cuba, produced by pro-slavery agitation, and followed by the emancipation of all the slaves of that island.

The annexation of the Cuban slaves would increase *the supply* of cotton and diminish its price. The annexation of every European immigrant tends to increase *the demand* and raise its price, and yet pro-slavery leads the South to seek the former and to interpose obstacles in the way of the latter. The consumption of cotton, per head, within the Union, is about *fourteen* pounds. In Ireland, it is little more than *one.* Half a million of Irishmen, or of Germans, within the Union, would consume seven millions of pounds, and such an importation of men *for only ten years,* would give, with the natural increase, a population that would consume more of our cotton than is now con-

sumed by the whole population of Great Britain and Ireland. *At ten cents a pound, the latter cannot consume more than about eighty-five millions of pounds,* and the power to pay for it is steadily decreasing.* Immigration trebled from 1831 to 1835; and it did so again from 1844 to 1847. Under the compromise, it became stationary. *It is now steadily receding,* and thus it is that while the whole policy of the South tends to increase the number of cotton producers, it tends to diminish the number and the powers of cotton consumers. Had the growth of immigration for the year 1846–7 to the present time been the same as in the four previous years, it would be this year *six hundred thousand,* making a market on the land for the products of the land to the extent of *sixty millions of dollars;* whereas, there is now every reason to believe that it will not greatly exceed *two hundred thousand,* and thus will the farmers and planters of the Union be deprived of a market to the extent of *forty millions of dollars.*

The average cost of raising the people who arrive in the Union exceeds one thousand dollars, and it is the most valuable species of merchandise that we can import, *because it is the one that adds value to land,* and yet it costs us nothing. The immigration of the present year will be less than it should be by 400,000, worth, at $1,000 per head, *four hundred millions of dollars,* and the Union will be poorer than it would otherwise have been by this whole amount—and probably much more; and all this loss is due to pro-slavery commercial policy. I beg you now to determine for yourself how much so great an interference with the growth of capital tends to diminish the power of the people of the Union to make a market for your great staple.

From 1842–3 to 1847–8, the domestic consumption rose from *less than eight* to almost *fourteen* pounds per head. It is now stationary, with a tendency downwards, whereas it should have grown to *almost twenty pounds* per head, which would give, with a population of twenty-three millions, a home demand for 400,000,000, or almost half of the crop. What then would be the price of cotton? Let it be observed that *every advance of price resulting from increased demand, increases our power to consume, because it is attended with general prosperity.* English merchants caution us against advanced prices, because they "check consumption," but the sole cause of diminished consumption is the inability of England to increase her production of commodities to be given in exchange for it. The reverse would here be the case. *The richer the planter grew the more iron he would need, and the more iron that was needed, the more cotton would be consumed.*

Fortunately for the South, the government lent no countenance to the Cuban scheme, so pregnant with ruin to Southern interests. Fortunate for it would it have been had the late administration acted towards Mexico as the present one has done towards Spain. The sole good fortune to the South in all the recent movements, consists, as I think, in the extensive failure of its views in regard to territorial aggrandizement. A large portion of Texas is unfit for slave cultivation, as is the whole of the recent acquisition from Mexico. Had it been otherwise—had New Mexico and California been a new Alabama and Mississippi—the effect would have been to produce a still more rapid dispersion of population, attended with a great diminution in the value of landed property in all the States east of the Mississippi, a diminution in the return to labour, and diminished strength, the natural accompaniment of which would have been a very rapid increase of the pro-slavery disease in one part of the Union, and of the anti-slavery one in the other. The result might then have

* Crop.	Price.	British and Irish Consumption.
1841	10·3 cents.	97,000,000
1842	8·2 "	97,000,000
1847	10·1 "	77,000,000

been war between the two sections of the Union, but certainly as I think a dissolution of the Union, next to war the greatest calamity that could befall the South, whose only security is to be found in the establishment and maintenance of harmony.

I pray you now to examine these facts and determine if further progress, in the present direction must not be attended with increased weakness on the part of the South, and increased danger to its institutions, and further to determine if a result widely different would not have been obtained by a continuance of the policy of 1828. Had the mining of coal and the manufacture of iron gone on, would Virginia have been depopulated? Had South Carolina built factories, would her population have ceased to grow? Had they rendered available their water power, their fuel, their ore, and their limestone, would their lands have so greatly diminished in value? Would the whole South now be seen holding meetings with a view to endeavour to diminish the product of cotton? Would it not, on the contrary, be now rejoicing in the increased facility of obtaining both cloth and iron, and the increased power to raise food and cotton consequent upon having brought the consumer to take his place by the side of the producer? Would not the slave be now feeling the benefit in his improved condition, and the master in the increased value of his land? Would not the questions of anti-slavery and free soil have remained as undisturbed as they were twenty years since? Would not the harmony that once existed between the North and the South have been maintained? That it would have been so is, I think, beyond a doubt.

The whole difficulty, be assured, *lies in this question of commercial policy*. The South is constantly weakening itself, and therefore it is that pro-slavery and abolition grow. It has wasted more labour in settling new States, and making new roads through them, than would have built furnaces and mills to make *five times over* all the iron that is made in Britain, and convert *five times over*, all the cotton that is grown in America. It wastes, *annually*, more labour than would mine all the coal, smelt all the ore, roll all the iron, and make all the cloth, made in Britain—and to this enormous waste of labour are due exhaustion, dispersion, weakness, thirst for territory, pro-slavery, and jealousy of its Northern brethren.

Had the labour thus wasted been applied in the States east of the Mississippi, and north of Florida, leaving Missouri, Arkansas, Texas, and Florida for future settlement, what would be now the value of land in the older States? Would it not be double what it is at present? What would be the effect were it now to be so applied? I pray you to answer the question, and then determine for yourself how much the South has paid for almost twenty years of southern policy, and why it is that pro-slavery grows at the South, producing abolitionism and free-soilism at the North. That done, determine if the South does not owe it to itself to adopt a system of policy that shall bring about harmony with the North, and security to itself.

It is time that it should terminate its dependence on the market of a country whose production does not, cannot, keep pace with our own, and which, therefore, has, *and must continue to have*, in each successive year, less to give in proportion to what it desires to receive. The adoption of the policy needed for the correction of the oppressive system that was denounced by the author of the *Wealth of Nations*, would bring the market home and enable it to consume on the land a large portion of the products of the land, its exchanges being chiefly made with a people whose productive power increased as fast, if not even faster than its own, so that instead of giving more and receiving less, it would be giving less and receiving more. Let the South now do this—let it make itself independent—and the lands of the South will speedily double in value, and the world will cease to be astonished by the declaration of its belief

that slavery is "a blessing," and then it will cease to hear of abolitionism or free-soilism, because harmony will then have been restored. The people of the South have no friends like those whom they ruin—no enemies like those whose favour they court. Let them look to cultivate the friendship of those who are willing to be their friends, and they need care little for their enemies. Let them fail now to do this—let them continue to compel the majority to obey the will of the minority—and the result must, as I think, be most disastrous to themselves and their institutions—to both the slave and his master. Their safety is to be found in the continuance of the Union, and in that alone, and the Union cannot be maintained if the few shall continue to govern the many, to the ruin of all. Review, I pray you, the whole proceedings of the South, and satisfy yourself, as I think you may, that every step it has taken during the last twenty years has tended to diminish its strength, and then determine whether or not I am right in asserting that it never can be strengthened until it shall learn to act in harmony with its only friends, the people of the North.

And now let me add a few words on the tendency of public opinion on this subject, as manifested in the last twenty years, with a view to forming a judgment as to the future.

The tariffs of '24 *and* '28 *were the work of the always democratic Middle States.* Gen. Jackson's faith on this subject was that of those States. He believed with Adam Smith, that the British system was "a manifest violation of the most sacred rights of mankind," and a great "discouragement of agriculture"—that we had been too long "dependent on the policy of British merchants;" and that it was our duty to provide a better market "for our surplus produce," by diversifying the pursuits of our people—and his opinion on the subject was fully and freely expressed. He transferred to his successor the support of a party as powerful as any that has ever yet existed in the Union; and yet that successor, when a candidate for re-election, received a most signal defeat, *because he had departed from the old democratic faith.* The election of Mr. Polk was due to representations that he was more favourable to protection than Mr. Clay, and but for those representations, he would have been defeated. He gave us the tariff of '46, and the result of this subjection of the majority to the will of the minority, was seen in the election of General Taylor, who holds to the old democratic doctrine of the Middle States, which teaches now, as it has always taught, resistance to the British system; and it is as a believer in that doctrine that he will be re-elected, if a candidate.

The Middle States have received, and are receiving, from the tariff of '46, a lesson that will not be soon forgotten, while both at the North and South there have been great changes, and greater ones will yet take place. Many of the warmest friends of the tariff of '42 came, as you know, from Southern States whose delegations had been unanimous in their opposition to that of '28, and every new mill that is built makes converts, because the advantage of bringing the consumer to the side of the producer is thus made manifest. Judging of the future from the past, is there not, then, good reason to believe that *until we shall have conquered freedom of trade* by the annihilation of the monopoly system by aid of which Great Britain has taxed the farmers and planters of the world, no candidate for the presidential office will ever receive a majority of the votes of the people who is not known to be honestly, and decidedly, favourable to the doctrine which teaches that resistance to the British system is as much the duty of the men of 1850, as it was of the men of 1776?

Ten years of adequate protection would accomplish that object by placing

the manufacturing industry of the Union at the head of that of the world; whereas a century of the present system will fail to accomplish it.

I pray you now to look to the fact that the only two cases in which candidates for the presidency have avowed themselves advocates of what is now called free trade, *which consists in sustaining the English monopoly system*, were those of Mr. Van Buren, at his second term, and of General Cass, and that both of them were defeated, although the nominees of a party that has known no other defeat in half a century—and then determine for yourself how long it will be before there will be another candidate for the presidential chair *bold enough* to claim popular support on the ground of his willinguess to sustain the system which Adam Smith denounced, and against which the people of '76 rebelled.

I am yours, very truly,

———— ————.

GOOD FARMING—WHAT IT CONSISTS IN—ONCE FOR ALL.

The principles upon which good farming is founded are few, plain, and intelligible, the whole of them being comprised in four simple operations, viz. making land dry, clean, fine, and rich. All the works of our most eminent agriculturists, all the discussions at our great shows, all the performances of our best farmers, have served only to elaborate these four processes. It is not by taking any of these separately that good farming can be attained, but rather by a happy combination of the four put together, and by a judicious adaptation of the parts to the whole. It may here perhaps be of use to bring into a small compass the leading points of each process. 1st. Draining is intrinsically important, not only in doing good of itself, but likewise in being essential to the well working of the other three. Stagnant water, under any circumstance, must be injurious, but by the removal of it further advantages are obtained. When the land is laid dry the work of the plough may be going on at most seasons of the year; the soil is brought into a more friable state, and it does not become so consolidated from a heavy fall of rain. Such are its advantages, that the expense may often be repaid in a single year. 2d. Land being kept clean is one of the first things in good farming. It would seem needless to say that weeds take from the soil that strength and fertility which ought to be reserved for the crop alone, were it not that the dirty farming prevailing in so large a part of the kingdom seemed to set this truism at defiance. On drained land weeds are easily eradicated or killed; and if this be once done effectually there will not be much trouble in the matter afterwards. A proper rotation of cropping will attain what is here wanted, with ease and advantage; the introduction of the green crop system has much facilitated this operation. The old fallows being now discontinued on almost all lands, a well worked crop of turnips or beans will equally serve the purpose of ameliorating the soil by frequent turnings, and perhaps keep it clearer by the overshadowing they create than can be be done by its being baked even by a hot sun. It is too often supposed that the clean green crop named is all sufficient for effecting the purpose alluded to, and that the corn (grain) crop following may be left to itself, but this may be considered a great error. There *can be no reason why a crop of corn (small grain) should not be kept just as clean as a crop of turnips*, and modern inventions have so facilitated this matter, that there can be no excuse for bad farming in this particular. If the corn crop be grown in drills (and there certainly can be no pretensions to the higher order of farming without drilling), by the use of Mr. Garrett's horse-hoes, and followed by Dr. Newington's hand-hoe cultivator, the land may,

with little trouble and expense, be kept perfectly clean and friable.* This brings us to the 3d section, that of tillage, which is perhaps about the most important of the whole. Nothing can show more the low state of farming in general in this country than this very process. The drill system was invented more than a century ago by Jethro Tull, yet at the present time in many parts it is not practised: in others it is not even understood. The object of this is not only to give such an equal distribution of the seed in sowing that each root may have its proper share of nutriment from the soil, but, by the plants being grown in rows, a clearer space is given for working the soil, by which it is not only rendered more friable for the spread of the fibres, but it is cleaned from the superfluous growth of weeds. This friable state of the soil is not only required near the surface, but by deep stirring must give ample room and facilities for the roots to shoot their fibres to the extent they will do under favourable circumstances. The high authority already quoted considered that one or two ploughings were good, but a third ploughing better, and a fourth best of all, as it was by the extreme diminution of the different particles that he was able to grow good crops of wheat (more than 30 bushels per acre) for 12 years running on the same soil, without an atom of manure. This brings us, lastly, to the 4th part—making land rich. And here, though it may be possible to grow successive corn crops without manure, yet no one will deny that by judicious management and the application of suitable manures, the bulk and goodness of the crop may be greatly increased. Infinitely more attention is now paid to this branch of farming than it used to be formerly. The farm-yard and buildings are better constructed. Much of the old system of constantly turning out the cattle is by degrees wearing out, and more dung and of a better description is made. The turnip culture has greatly contributed to this, as, if green crops be raised, it is in most cases indispensable that cattle should be kept to consume them. The profits of a farm are perhaps chiefly dependent on the quantity of dung made and at command, as though in bad farming much of it may be either wasted or misapplied, yet in that of a superior order the crop, be it green or grain, may be so forced and increased by the application of rich fertilizers as to put three or four times the money into the farmer's pocket, that could be done without it. The discovery of guano has been highly favourable to the farmer's profits; about 3 cwt. of this, costing about 30s., will go as far towards raising a good crop of turnips as perhaps 10 or 12 tons of dung. Bones with sulphuric acid have been found still more economical than guano.† There are also a number of artificial

* It gives us pleasure to announce, what we should have expected of him, that Mr. Colt, of Paterson, New Jersey, has sent for one of Garrett & Son's Horse-hoes. If too complicated, we have little doubt that, like the English drill, it will be simplified by some of our ingenious mechanics, and adapted to use in this country; and the credit of its introduction into use in that case, will be a "partnership concern" between the importer and the improver. Mr. Colt will also, we doubt not, import one of Dr. Newington's "hand hoe cultivators," and his hand-dibble. The American Institute ought to import such things for exhibition; but while men, women, and children, attend by hundreds of thousands their Annual Fairs, they give public notice, that all who wish to seek of them information as to the great Industrial Fair of the world, must—*pay postage!* cheap as that is! There is, said Napoleon, sometimes "but one step from the sublime to the ridiculous," and here it is. A notice to American Inventors by the "*American* Institute," of a great Industrial exhibition, bringing the genius of all countries into competition, and in regard to which, an Institution nominally *national*, "THE AMERICAN INSTITUTE,'2 will give such information as it has (the same that every one else has), but mark ye—Mr. Inventor—you must be careful to "pay postage"—10 or 5 cents, as it may happen! What an exhibition of public spirit! Prodigious! Especially for "the Foster-mother of the arts,"

† And how slow has been the progress in the use of guano. Here in the United States it has been distributed, and its virtues proclaimed by us in the old American Farmer, twenty years before it was proved in England.

manures composed of various ingredients, which at least profess to be cheap and useful. Soot, too, which may be bought near the large towns at 2*d.* the bushel, is an excellent stimulant, and when mixed with different alkali, will force a quick and luxuriant growth in most plants. The different processes now named should be the chief objects aimed at by every farmer, who wishes to make his pursuit not only creditable to himself, but profitable as a pecuniary investment. Some splendid specimens in this line have been lately exhibited, and it has been proved from undoubted authority, that the profits arising from it are such that they may be made to counteract many of the disadvantages under which the farmers labour at the present time. At all events, if high farming will not answer, low farming never can. If 40 bushels of wheat (not an exaggerated quantity) are grown, where only 20 bushels (a very common quantity) were grown before on an acre, it is not saying too much that this will amply counterbalance the present fall of prices. By an improved system the greatest benefit will accrue both to landlord and tenant, but to be going on in the old beaten track, and to neglect the opportunities which science, combined with capital, holds forth to an enterprising spirit, must be ruinous to both. It therefore becomes the duty, as it is the interest, of the landed proprietor, to give encouragement to modern improvements, and by co-operating with tenants of intelligence and ability to work out the four processes here described, and thus bring his undertakings to a successful termination.—LAW. RAWSTORNE, *Penwortham, May* 15.

UNLOADING HAY AT THE BARN.—The following, which we find in the Boston Cultivator, is that sort of thing that one likes to meet with, because it is not merely new, but has every appearance of being really useful.

The writer thus describes a process for stowing hay, which he says is vastly more economical of time and labour, than the usual way of throwing off the load, by forks-full at a time. The cost, he says, of the apparatus is only $15, which, he adds, it will save in the unloading of the first fifty tons:—

"The improvement consists in removing one-half the load at a time, from the wagon to the mow, in one entire body, by means of a windlass, and thus saving all that vast amount of strength and exertion, which is at present expended in separating the forks-full from the load. On commencing the loading, a web, or piece of net work, made of small rope, and resembling in appearance the cording of a bedstead, is spread over the bottom of the wagon, and the hay is loaded on it, until the load is about one-half on, when another web, similar to the first, is spread over the top of that, and the remainder of the load is placed on it. On arriving at the barn, a rope, which passes through a pulley, suspended to the ridge, directly over the mow in which the hay is to be placed, and extends down to the windlass, is hitched to the outer edges of the uppermost web, and then, by means of the small windlass which is placed at the side of the floor, a man, the driver of the team, can elevate that half the load which is above the web, over the beam, and drop it into the mow, in the short space of two minutes.

The hay is dropped by unhitching one of the hooks that connects the rope with the web, by means of a small cord which is attached to them, and runs down to the windlass, so that the man there can drop it wherever he pleases; the windlass, rope, &c., can be removed from one barn to another in a few moments, so that one set will answer for any number of barns. Only one man is required to go from the field to the barn, as the hay being dropped in various parts of the mow, needs no stowing away, except an occasional levelling, which may generally be done in wet weather. With its assistance, one man can unload a ton with more ease in five minutes, than two men could have done in forty-five with forks. The apparatus, or further information respecting it, with a drawing representing it in operation, can be had of me; who am, yours, with a desire to forward useful improvements, J. A. H. ELLIS.

Rochester, N. Y.

ETHER AND CHLOROFORM IN VETERINARY PRACTICE.

The following successful experiments upon cows, horses, and bees, with chloroform and ether, lead to the hope that rural economy is in various ways to derive great benefits from their use.

Ether in Spaying Cows. (*Translated for the Patent Office Report by F. G. Skinner.*)—The extirpation of the ovaries in cows is attended with so much pain, and is so often fatal, that the operation has, in a great measure, fallen into disuse. Dr. Seifert, of Graschnitz, Upper Styria (Austria), operated upon two cows (previously rendering them insensible by the application of sulphuric ether) with entire success.

The animals were of the Murzthal breed. The first, four years old, had had two calves, and was of a lively brisk temperament; the second, of a quiet, docile disposition, was seven years old and had calved five times.

After causing the first cow to breathe the vapours of ether for three minutes, an incision of the skin was made on the right side. But it appeared that she was not sufficiently under the influence of the ether, for her struggles were so violent, that the operation had to be suspended and the ether applied again. At the end of five minutes the cow fell, but not remaining quiet more than two minutes, a third application was made and continued until she lost all sensibility.

The operation was then proceeded with and finished in eighteen minutes, or rather in eight minutes, deducting the time employed in applying the ether. Thus, in this short space, the incision of the tegument was made, the ovaries removed, the wound closed and stitched, and the adhesive plaster applied. The patient recovered all her faculties five minutes after the operation, and twenty minutes after the application of the ether. She entered the stable staggering slightly, where she refused the food and drink offered her. The second cow was completely torpid at the end of three minutes, but she remained upon her feet during the whole operation, which lasted ten minutes. In seven, she was in a condition to walk to the stable, where she immediately commenced eating.

The pulse and the breathing of both cows diminished a little while they were in the torpid state. The pupil turned down, and convulsive tremblings passing over the entire body, were particularly pronounced in the muscles of the skin. Involuntary alvine evacuations occurred, and a watery mucus flowed abundantly from the eyes and nose.

The result of these experiments goes to show that the success of etherization greatly depends upon the temperament of the animals submitted to it. Thus, the first cow fell down completely senseless, whereas the second remained passive upon her feet, so that the entire operation, cutting, excision of the ovaries, stitching, &c., was performed in the short space of ten minutes, and without the manifestation of the slightest pain on the part of the patient.

The fever, following the operation, was much higher with the first cow, and she did not ruminate (get her cud) until the evening of the same day. The other cow, whose functions all remained in a natural state, was milked on the same day, but the milk had a disagreeable flavour of ether.

Both cows were in perfect health three days after the experiment, but the secretion of milk with the first was not as great as in the second. The following table indicates the secretion of milk in each from the third to the eighth day, when the quantity remained stationary.

Days.	First Cow's Milk.	Second Cow's Milk.
3d,	2 quarts,	3 quarts.
4th,	4 "	3½ "
5th,	8 "	6 "
6th,	12 "	9 "
7th,	16 "	12½ "
8th,	20 "	16 "

It is to be remarked that the milk did not lose the flavour of ether until the fourth day. Such, says Mr. Halabeck, the reporter of these experiments, is the result of an attempt to which many agriculturists attach great hopes, because they see in it a powerful means of increasing the product of their dairies.—These experiments bear upon three important points in rural economy. 1st, an increased secretion of milk; 2d, a greater disposition to fatten; and 3d, a better quality of meat.

As to whether castration will cause cows to produce more milk and for a greater length of time than in the ordinary state, we have as yet made too few experiments to enable us to decide, but it is evident the operation will be exceedingly useful if these results are confirmed by additional experiments.

On the other hand, there can be no doubt spayed cows fatten more readily than others, and their flesh is more delicate. Another point, probably quite as important as the preceding, is, that cows are by this operation *better fitted for the labours of the field*, and this is a fact that should attract the attention of small farmers. From the preceding we may conclude that the use of sulphuric ether is a discovery that may be of vast importance to stock breeders and to dairymen, and that it certainly ought to come into general use.

Observations on the Efficacy and Method of Employing Chloroform in Veterinary Practice, and on a Case of Lock-jaw (Tetanus), successfully treated by Chloroform. By PEARSON FERGUSON, Esq., *London Lancet.*

Mr. Ferguson, after calling attention to the objections against the use of anæsthetic agents in veterinary practice, which have been stated by Messrs. Morton, Henderson, and others, remarks:—

"When, however, the details of these experiments are examined, it becomes at once plainly evident that they are remarkably defective in many particulars. The principal defect, however, is attributed to the apparatus employed, which has either allowed the free admixture of atmospheric air with the vapour in inhalation, or, on the other hand, has been so constructed and applied, as to cut off all communication with the atmosphere, and to compel the animal to breathe the same air over and over again. . . . . I must mention as the greatest difficulties in using chloroform with the horse, next to that of imperfect apparatus, are, the universal fear of lying down when labouring under sickness, and also the great danger of serious bodily injury to so large an animal falling in a state of intoxication. In my practice, therefore, in order to avoid these dangers, and to secure the perfect administration of the agent, I have always had the animal cast; after which somnolence may be obtained in a very short time by a method of the simplest nature, which not only secures the inhalation of pure chloroformic air, but also permits perfectly free and unimpeded expiration, and entirely obviates the danger of suffocation."

Mr. Furguson then cites the following cases:—A large, powerful, and irritable gray horse, the property of Mr. Hatfield, of Manchester, having disease of the fetlock joint of long standing, was cast on the right side. A piece of coarse sponge, of the proper size to fill the transverse area, was placed in the left nostril and saturated with chloroform, through which the animal inhaled the vapour, while the right nostril was closed with the right hand. Then expiration was performed by releasing the right nostril, and closing the one

containing the sponge with the left hand; and thus the alternate movements of inspiration and expiration, regulated by these manipulations, were allowed to proceed rather more than two minutes and a half, when insensibility was complete, the respiration having become exceedingly slow, the pupil much dilated, and the pulse somewhat increased in frequency. The leg was then fired most severely, the skin having been cut through in many places, but not the slightest symptom of pain was evinced. In this case rather more than an ounce and a half of chloroform was used. The somnolence continued for thirty minutes, when on sprinkling some cold water on the face of the animal, he got up and walked somewhat unsteadily to his box.

Case 2d—A valuable steeple-chase horse, sent from Liverpool by Mr. Wm. Harrison, who, on placing him under my care, informed me that he had been a long time lame, and treated in various ways without success. On examining him I concluded that the lameness was situated in the foot, and I suggested an operation as the only means likely to relieve it. To this, Mr. Harrison consented, and as the animal was exceedingly irritable, and the operation (excision of a portion of the middle plantar nerves) under ordinary circumstances was exceedingly painful, and somewhat difficult to perform, it was determined to put him under the influence of chloroform. He was therefore cast, as in the former case; the sponge saturated with chloroform was placed in one nostril, and inhalation being regulated in a manner similar to the foregoing, in less than a minute he was seen to be much affected. The breathing had become deep, the pupil dilated, and the pulse much increased, and in two minutes and a few seconds he had inhaled sufficiently and was quite insensible. The leg was then unshackled, and the operation performed on both sides the limb without symptoms of pain or the slightest struggle, although it was necessary to turn him over from the left to the right side.

After the operation, which occupied altogether little more than five minutes, he was permitted to remain down for some time, during which respiration was very slow, the pulse fell to the natural standard, and he appeared to be enjoying a sound sleep, with the exception of the eyelids not being properly closed. In this state he remained for about twenty-five minutes, when consciousness began to return. He was then excited to rise by dashing cold water on the face.

In several other cases chloroform was exhibited with similar success, and it only remains in this place to state, that the quantity required to produce insensibility, averaged an ounce and a half, and the time from the commencement of the operation until somnolence was about two minutes and a half.

I feel it necessary to direct attention to the circumstance, that in administering this agent, care should be taken to observe the state of the muscles of the neck; and on the depressors showing symptoms of being overcome by the force of the elastic ligament at the back of the neck (which will be evinced by the gentle drawing back of the head), the apparatus must be at once removed, for if insensibility be not absolutely perfect, it will certainly become so almost immediately and continue for some time. I believe that chloroform will, if judiciously applied, be found most useful as a remedial means in veterinary practice, more especially in diseases of a spasmodic nature. To this belief I have been led partly by theory and partly by an experiment, which I shall relate. Just prior to the introduction of chloroform, a highly bred bay mare, the property of Dr. Hatton, of Oxford street, in this city, was, during his absence in the country, attacked with tetanus (lock-jaw), and remained without medical treatment for four days, when my assistance was requested. On my arrival at the stable the poor animal was found to be affected with general tonic spasms to a most aggravated degree. The jaws were closed, the limbs stiff and immovable; the neck was drawn up and the tail elevated. The

stable boy mentioned that the mare had not passed any evacuations, or eaten or drank for three or four days. The hopeless nature of the case was evident. It was a good opportunity to try the effect of anæsthetic agents, and having obtained the consent of Dr. Hatton, six ounces of sulphuric ether were placed in an apparatus which was applied to the nose. This apparatus, like most complicated instruments, was not perfect, and permitted the access of much atmospheric air. Nevertheless, after half an hour's inhalation (imperfect though it was, even with the addition of five ounces of the ether) the muscles became so relaxed that she was on the point of falling, the eyelids being half closed, and respiration slow and not difficult. At this juncture, the apparatus unfortunately became detached and broken, and our experiment was frustrated; for the fright occasioned by half falling, coupled with the admission of free, cold atmospheric air to the lungs, aroused the mare from her stupor, and although the jaws had so far relaxed as to enable medicine to be given, and to admit of her taking a little gruel in the evening, the spasms returned, and paroxysms succeeded each other until the next morning, when she died, at seven A. M. Now, although unsuccessful in the result of this experiment, enough was elicited to induce me to conclude that, with a proper mode of administering the anæsthetic agents, we may reasonably hope for beneficial results not only in the treatment of tetanus, but also in spasmodic affections generally.

I have had an opportunity of testing the utility of chloroform in the treatment of spasmodic colic; and I can state that it is most beneficial when given internally, in doses of two drachms, with the same quantity of tincture of opium, and an ounce and a half of spirit of nitric ether. Were the term specific at all admissible in the practice of medicine, this compound as an antispasmodic, might have a fair claim to the designation.

The foregoing observations were written in the autumn of last year, but their publication has been unavoidably postponed to the present. Since then, I have had an opportunity of testing the efficacy of chloroform as a remedial agent in the treatment of tetanus, and the result has *fully answered my most sanguine anticipations.* Last month a carriage horse, the property of Mr. John Preston, of Manchester, was, after severe work and exposure to cold, seized with tetanus. The attack came on late at night, and I was requested to see him the following morning. On arriving at the stable, I found the animal unable to move about the stall, and "emprosthotonos"* was the form the disease had assumed. The head was drawn down to the level of the knees; the back arched; the hinder extremities being very much under the body; the abdominal muscles tense, and the pelvis drawn forwards; trismus, however, had not taken place. I at once decided to try chloroform, but not in such quantity as to make him fall. The apparatus was then applied (allowing a small quantity of atmospheric air to mix with the chloroform in inhalation, so as not to alarm the patient) and, after he had been inhaling for about four minutes, the gradual relaxation of the muscles and flank were really wonderful to observe.

He continued to inhale it for about fifteen minutes, by which time he broke into a sweat, and his head was raised to a level with his back, that being just the height at which the elastic "ligamentum colli"† will support it, unaided by muscular action. His legs, too, became quite flexible; and it appearing that he would fall if more were administered, the apparatus was removed. A very powerful purgative, and also an enema (injection) were then administered, and a large quantity of warm clothing being put on, he was left alone, with strict orders that he should not be disturbed. On examining him the

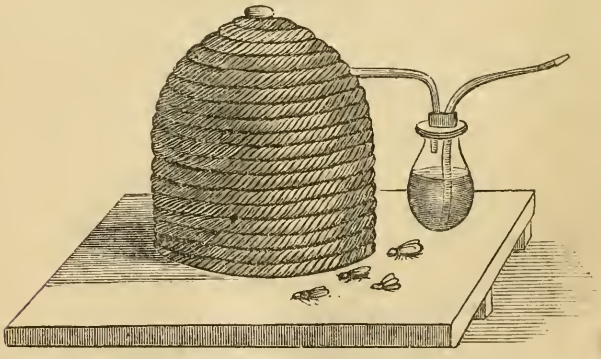
* This term is used when the disease is partial and affects only one-half the body.

† The tendon by which the head is supported.

following morning there were again some tetanic symptoms, but they were confined to the neck, and principally affected the muscles of the shoulders on each side. The chloroform was again had recourse to as before, and in about twelve minutes, having inhaled about an ounce of the agent, the rigidity entirely disappeared, and he purged profusely; from that time he went on most favourably, under the treatment most usually adopted in convalescent cases, and is now well.

Etherization of Bees.—The idea of applying the vapour of ether to bees in order to get the honey without destroying the swarm, first occurred to Mr. Defays, professor at the veterinary school at Brussels. He had amused himself with experiments upon humble bees, and was struck with the facility with which these insects became torpid when made to inhale the vapours of sulphuric ether.

With a view to save the apiarist the annual loss of swarms of bees in taking their honey, he was induced to try the effects of ether upon them, at the time of emptying the hives. A beehive was procured and the vapour introduced by means of a simple contrivance of Mr. Defays' invention. This apparatus is composed of a glass globe, with an opening like that to an ordinary bottle; this opening is stopped with a common cork, through which two tubes are passed. One end of one of these tubes passes through the ether, with which the globe is partially filled, to the bottom; the other end is bent out at an obtuse angle, to render it convenient to the mouth of the operator. The second tube is merely passed through the cork, one end entering horizontally into the hive, by an opening that permits the passage of the air, but not the escape of the bees.



To introduce the ether into the hive in the form of vapour, all that was necessary was to blow the air into the globe through the tube, one end of which was submerged in the ether. At first, for a second or two, there was great disturbance in the hive, attended with a loud buzzing, but this gradually subsided, until it entirely ceased at the end of a minute. The hive was then lifted from the table, and the bees (having left or fallen from the comb) were found lying upon it in a torpid condition. The honey might then have been taken, but the object of the experiment being attained the hive was, at the end of fifteen minutes, returned to its place, the swarm being still in a state of insensibility. The time of their revival was not noted, but the following day the bees were as lively as usual.

THE TRADE IN PEGGED BOOTS AND SHOES—ITS HISTORY, AND ITS CONNECTION WITH AGRICULTURE.

IRVING HOUSE, *New York, July* 4, 1850.

THE man who keeps his eyes open, with a proper desire to make the most of this up and down journey of life, on which all are travelling to the grave as to a common goal, will often stumble, as it were, on curious and instructive facts, where he little expected to meet with them. Some days since, in a store in New York, chance threw in our way a little printed "Report," by J. R. Pitkin, 68 Broadway, David Stevens and John H. Cornell, "*commissioners of the American Union Company,*" formed for what, does the reader suppose? Why, for manufacturing "*Staple or Pegged Boots and Shoes!*" Well, the curious facts disclosed in this Report are, among others, that in December of last year, Joseph Walker, of Hopkinton Massachusetts, who "made the first pair of pegged shoes ever seen in this or any other country," was still alive; and that he had gone on, making his pegged shoes and boots, for more than ten years, without competition; after which, while he was (as we hope he is) still living, the trade in the article had increased in his State, to the amount of $18,000,000 annually, giving, as stated in this Report, "constant, honourable, and profitable employment to 60,000 inhabitants" of Massachusetts! and yet, say the commissioners, the demand for this manufacture exceeds the supply; which, they urge, should now be met by the proposed Union manufactory in the city of New York, with branches in the surrounding country.

Now to a contemplative mind, how various and impressive are the reflections that arise, on a view of facts coming thus casually under one's notice. The first impulse is, to acknowledge the benefit to society, from this simple invention of an unpretending individual; now affording, as it does, employment and sustenance to so many thousands of his fellow citizens; and then one is led to marvel at the perversion of political justice, which continues to be practised all around us, in this boasted age of reason and of *progress!* For if, instead of inventing a process in shoe making, which secures to his State a business amounting to $18,000,000, and giving employment and clothing and sustenance and education to 60,000 men and women, Joseph Walker had invented a *rifle* or a *torpedo,* that would economically *destroy* 60,000 in a day, no honour would be deemed too high—no reward too great, for the inventor of the death-dealing implement. Whereas, who cares for—who, beyond the village of Hopkinton, will ever hear of Joseph Walker, the inventor of pegged boots and shoes? On men, some of them, be it admitted, true patriots in the true sense of the word; some of them, cosmopolitan vagabonds, without country or principle, and too lazy to work at any honest trade—men who volunteer or enlist, to march and carry death and destruction among distant and unoffending people; on all such men, besides their pay and rations, governments are ever ready to bestow rank and honours, lands and pensions. And yet, could the rising generations be schooled and educated as they should be, in the true spirit of Christian civilization, and in anything approaching to a just appreciation of the public welfare, (as they would be educated if the cultivators of the soil would compel the establishment of agricultural as well as military schools throughout the land,) we should then see public lands and public honours meted out, in something like a just and politic reference to the tendency of men's lives and actions to *promote the public happiness!* Notwithstanding all this flagrant perversion of the ends of wise government, and the dictates of sound policy, there is no measure of eulogy, that national vanity can conceive, which men deem adequate or sufficiently high-coloured to portray the excellence of those

"*republican systems*," under which such gross folly and injustice is enacted! But, to use a huntsman's phrase, we must "try back" from these moral and political reflections (in which even the tax-paying clodhoppers for whom we write would themselves persuade us they have no business to indulge), and endeavour to show, in terms so plain that every one may understand, how real is the connection between *making pegged shoes, and making Indian corn;* when both are made in our own country, where the parties feed and shoe each other, under a system of genuine "free trade," mutually and equally advantageous.

What facilities does Massachusetts possess over New York, for manufacturing pegged boots and shoes? Yet, as a general thing, to the farmers and planters of the whole Union, who get these boots and shoes (along with so many other things from New England), must it not be obvious, that were these $18,000,000 worth of boots and shoes made, as our iron and cloth are, in foreign countries, they would lose their home market for all the commodities consumed by the 60,000 employed in making them; and instead of getting them in exchange for that amount of raw hides, and beef, and corn, and flour, and cotton, and rice, they would have to pay for them in specie, or in evidences of public indebtedness, to foreign nations? Such is the great gain *to the nation*; let our manufactures be made where they may, so it be in our own country, and out of our own materials. It is to supplying this ever increasing demand in our own country, in fact, that we must look after all, as the sure guarantees of general agricultural improvement. *This* is the "free trade," free trade between citizen and citizen, all well paid for their labour, and therefore able *to consume much*, that we should contend for, in the first instance. But, says the Farmer and Planter of New York, and they say truly, if we can draw the lapstone and the workbench, as well as the Loom and the Anvil, yet closer to the plough and the harrow, will it not prove a yet greater saving of expense, in exchanging the products of them all; leaving yet more time and means, to the cultivators of the soil, for the improvement of their great machine of production—the land—in like manner as it is an admitted economy, everywhere coveted, to have the grist mill near the grain, the saw-mill near the timber, and the smith's shop near the farm? The fathers and grandfathers of the present generation of tobacco planters, formerly shipped their tobacco "home" to London factors, and ordered back hats, and saddles, and boots, and as low down as jugs of rum. That was when our subjection to the colonial policy of England was only a little more stringent than it is now, that Sir Edward Lytton Bulwer, and the millionaire, W. Brown, of "Richmond Hill," say we should by all means continue to send to "the great workshop" for our iron and cloth! God send that the time may come, as it should have come before, along with the Declaration of Independence, *this day* 74 *years ago*, that it will be deemed as absurd to send to "the great workshop of the world" for iron and cloth, as it would be now to send there for hats and saddles. Is it not conformable to the nature of things, and to common sense, that everywhere the light machines, the factories and the furnaces, used for converting the products of the earth into shapes for use, should come to the great machine of production, and use up its bulky commodities on the spot where nature planted them, instead of sending away the raw material in its rudest state, yielding to foreign nations all the profits of carrying them through every process and every modification, even to the last stroke of labour, and the highest polish of art?

Aye, would that we had the power to impress on the minds of our readers, as it deserves to be impressed, the great political and fundamental truth, that in every wisely administered government, the cardinal policy, the only policy that can secure general melioration and advancement, is that conservative

spirit in law-making, which leads the inhabitants of a country to *concentrate* and *combine* their powers and faculties and interests, in pursuits as *diversified as the climate and resources of the country will admit;* dispersing only as Bees, emblems of industry and wisdom, disperse when, and only when they are too much crowded; and then re-settling as near the old homestead as the means of sustenance and the offices of good neighbourhood will allow. In the very dawn of social organization, ere man has fairly escaped from the egg-shell of his original weakness and barbarism, the first dictate of common sense, the first lesson of experience is, that "two men can lift a log that one can neither roll nor lift," and as Peace, and the union of our faculties, are the great instruments for accomplishing the highest aims of social existence, so are they indispensable to the maintenance of public prosperity.

For nations of more limited geographical extent, and internal resources; or for nations whose territory, though extensive, runs through few parallels of latitude, and therefore comprises fewer elements of national independence, Providence itself has enjoined a different policy. Between such nations, the cultivation of a sense of mutual dependence, and a freer system of international exchanges, is indispensable to the supply of necessaries not otherwise to be had. But with us, how different! Look at our vast expanse from the Atlantic to the Pacific! Look at our natural capabilities! our boundless fields and pastures peculiarly adapted for the production of rice, sugar, cotton, wool; our inexhaustible forests of timber, and mines of coal and iron! our superabundant crops of corn and wheat, from Maine to California!

Why should we, increasing in numbers and in wealth; in the power of production and consumption, as no nation under the sun ever has increased; why should we make sacrifices, and live in colonial dependence upon nations oppressed in every form, and every year diminishing in their demand upon us and in their power to consume what we have to dispose of? No, let us force them to come and enjoy "free trade" with us, in our own country, where higher pay will make them customers worth having, to the Farmer and the Planter. Has it not been written in the book of our destiny, as by the finger of God himself, to these United States;—"Stand by each other, take care of yourselves first, your own means are adequate to the supply of every want, and the highest conceptions of human aggrandizement. Watch your rulers, restrict them in their expenditures, be jealous of armies and navies, and sinecures and pensioners! and *in the spirit of peace and of self-reliance, cultivate your own resources!*"

Well, gentle reader, it was to demonstrate these truths in the political economy of agriculture, and to propagate them, far and wide, that we undertook this work, seeking by its outward signs (figures of the Plough, the Loom, and the Anvil) to indicate its internal spirit; not meaning that protection against the under-fed and over-worked labour of Europe is any more necessary for the Loom and the Anvil, than it is for the lap-stone and the trowel. The intention was thus only to signify at once, our settled convictions, that, contrary to the crude notions too prevalent in the country, there is in fact, *between all our industrial interests, when well understood, a perfect harmony;* protection and mutual support being essential to the prosperity of them all; not to give to any, the advantages of monopoly, but to place all on a footing of fair competition, against the monopoly of England, with which we have now to contend; a monopoly kept up by starvation and low wages to her operatives, as the reader may be abundantly convinced by turning to the first article of this number, where he will see their condition truly and faithfully described in colours to make any honest man's heart ache. Yes, reader, it is in the promising and increasing dissemination of these doctrines, that we are expending individually, the equivalent of 4000 bushels

of wheat, to maintain this publication; and it is for those who look to the establishment of the doctrines here contended for, as indispensable to our permanent prosperity to say, *whether this effort shall succeed or be defeated*—whether we shall draw the Plough, the Loom, and the Anvil, and all other industries close around each other, for mutual support, or whether we shall scatter far and wide, each following the plough to keep soul and body together, sending to England for the products of her looms and her anvils, as advised by her Majesty's Minister, and by "W. Brown, M. P., of Richmond Hill, near Liverpool."

ON THE CULTURE OF WHEAT—VARIOUS KINDS—TIME AND QUANTITY TO SOW, &c.

While we are aware that every point is important, connected with the cultivation of one of the great staples of the country, we are also aware of the difficulty of suggesting anything really new, and which has not fallen within the range of the observation of experienced practical men, who look closely into all their field operations; and more especially the observation of those who, besides their own experience, have had the curiosity and the pride to make themselves familiar with what has been written on the subject.

Hence it is, that we are perhaps too prone to overlook subjects that fall within the routine of general experience, forgetting that every year brings a crop of young farmers into the field, more and more disposed, as we would fain hope, to save time, by learning at once, or as soon as may be, the results of philosophical investigation, sanctioned by practice.

It was in this last view of the subject of wheat husbandry, having an eye to the near approach of "seed time," that we gave, in our last number, for the benefit more especially of young farmers, a paper on wheat sowing, having applied, in the mean time, for the views, on that and other points, of a gentleman farmer—in the best sense of the word, one who inquires and thinks for himself—who combines close observation with thirty or more years of experience; and possesses, withal, that capacity to draw conclusions which belongs to a mind, that, like his fields, is deeply and well cultivated.

The locality of the writer is the flat tide-water region of the "Eastern shore" of the Chesapeake Bay, in Maryland; one, than which none is more striking or peculiar, or more exclusively dedicated to the culture of wheat and corn: neither is any going through a more general and improving course of amelioration, by modern systems, of liberal and enlightened culture. Still it is no child's play for them to live, as their fathers did before them, with houses and hearts, like their lands everywhere open and accessible, and yet improve their estates in competition with the German emigrant, on the fertile lands of the west, accustomed in his own country to work with his own hands, and to live on *pumpernickel!*

As for the minute practical details, for which our respected correspondent speaks, as it were, apologetically, we can only say, that it is just such plain, practical details that we always like to see in such communications, instead of the long, prefatory, self-depreciating prefaces, with which such communications are too often encumbered, reminding one, when at last you discover how little else there is, of one of those outrageous Mexican gourds—all neck and no body. If we may be allowed here, where there is nothing but the contrast to remind us of the fault, we would take the occasion to suggest to agricultural writers to avoid long preambles, and come at once to the gist of the subject.

The following is a most satisfactory answer to our queries. The signature will commend it to all who know the writer, and the matter to those who do not. ☞We would here suggest to our friends to get in the way of asking, through our pages as writers do, anonymously, or otherwise, in English papers, for information they may desire on any particular subject.

"Dear Sir:—I avail myself of the first opportunity to answer several interrogatories you have addressed to me on the subject of wheat. I will take them *seriatim*—and, first, with regard to *steeps*—they are not used in this section of county, save only for the prevention of smut; and brining and liming have been found to be effectual. Much has been written and published on this subject, and various plans proposed, on high authority; among the most prominent, that of placing the wheat in soak in strong brine, that will float an egg, for at least one night; the following morning, the wheat to be thrown on the barn floor, and recently slaked lime to be well stirred in, so that each grain may be coated, or impregnated with lime. It has been asserted over very imposing names, that this is not only effectual for the prevention of *smut*, but that the wheat germinates speedily and grows off vigorously. Such has not been my experience with regard to the last effect. The wheat evidently came up tardily—did not look healthy, and, altogether, disappointed my expectations. I had the most convincing proof of the fact; a strong appearance for rain in the evening, and the probability that the seeding would be suspended for a day or two, deterred me from putting the wheat in soak at the usual time: the weather proving more favourable than had been anticipated on the following morning, the seed was simply washed in brine, the lime applied in the usual way, and instantly taken to the field and sowed. There was a manifest superiority in the growth and appearance of the wheat thus treated, over that which had laid in soak for a night. This determined me to return to my old method of simply washing in brine and then immediately applying the lime, and as soon as possible thereafter, committing the seed to the earth. This method is equally effectual for the prevention of smut. By throwing a half bushel of wheat into a tub and then pouring the brine rapidly on, till it rises several inches above the wheat, the smut balls will float on the surface, and all light and inferior grains that are unfit for seed. Again, stir the whole with a stick; this will give the smut balls and light grains a chance to escape from the mass below and float on the surface. Place a basket on an empty barrel and pour gently in—all the trash will be retained in the basket, and the brine will be saved in the barrel below for future use. As soon as the light grains, &c. have floated off, then throw the entire mass of good wheat and brine into another basket, placed as before indicated on a second barrel—the brine will soon pass through, and then the basket is emptied on the floor and the lime stirred through the wheat. No time need be lost, for while the brine is draining off, another half bushel may be placed in the tub and be passing through the process; so that each operation may be going on in rapid succession, and seed enough for the day prepared in a short space of time. Attention to details constitutes one of the main causes of success in rural affairs. I shall therefore make no apology for the minuteness of the preceding.

"Need I add, that a strict account should be kept of the wheat measured dry, for it swells greatly, and if the farmer sows according to the measure of the wheat in the damp state, he will find his crop much too thin.

"I tried Glauber salt in solution, a few years ago, in place of the brine: it was strongly recommended as far preferable, and although I followed the directions given, strictly, it was by no means as successful as that above described. I was informed, however, by an intelligent farmer, that it was entirely satisfactory to him. Yet it is quite certain that we both pursued the same process. A neighbouring farmer has for years pursued the plan of making a good whitewash, strongly impregnated with salt, and immersing his seed therein; he assures me that he has pursued the practice with entire success and satisfaction. The inference fairly deducible is, that lime and salt, properly administered, are certain antidotes for that vile disease in wheat, smut. Would to God the "Hessian" could be as readily overcome. I have been so entirely free from smut for several years that no precaution has been used, and wheat in its natural state has alone been employed for seed: and it may be stated with truth and candour, that this method is preferable, because ever the most successful. How it is that my experience differs so materially from that of others, so eminently entitled to respectful consideration, I am unable to account for. Can it be, that I am surrounded with a *saline atmosphere?* It is proper to add, that the experience of others in this county fully confirms my own. I shall, therefore, always regret the necessity for brining and liming wheat for the prevention of smut—even when the operation is performed in its most mitigated form—but, nevertheless, whenever it may appear in the seed, whether purchased, or raised on my

own premises, I shall never *fail* to administer the remedy, because experience teaches me that it is potential. I have warned farmers of their danger in this respect, and besought them to apply the remedy; but no—they did not care for a little smut—finally, nearly one-half the crop has been smutty. It may be remarked, that some varieties are more liable to this disaster than others: so far forth as my observation has extended the beautiful white wheat from New York, called by General Harmon, of Wheatlands, the improved white flint, seems most liable to this disease. This is the more to be regretted, because it always commands the highest price in the market. I may add, while on this subject, that many years ago I washed some thirty bushels in pure water, and strewed over it powdered gypsum, which was incorporated thoroughly, and, although this wheat had much smut in it, the product was entirely clear.

"Some years ago a preparation was announced (Hauterieve's) as a steep for wheat—it was perfectly limpid and had a peculiar odor. I was induced to try it because it was asserted that neither bird nor fowl would touch the grain that had been steeped in it, and it was said to have many other virtues. Accordingly a barrel of this preparation was procured, and used agreeably to the directions.

"It caused rapid vegetation some days sooner than that which had been brined and limed, and seeded the same day in its immediate vicinity. The wheat made a rapid growth in its early stage, and for several months was so promising that a casual observer would have pronounced the land manured when it was growing, and that adjacent, without manure. This flattering appearance gradually subsided—smut also appeared in it, while that alongside, and treated in the usual way, was entirely clear: finally, at harvest, no difference was perceptible. This preparation, which promised so much, may be set down as valueless.

"To sow filthy seed is a disgrace to a farmer—the cylindrical screen will separate all cockle and darnel and all other seeds of weeds of less size than good wheat. Such great improvements have been made latterly in the wheat fan that filth, for the most part, may be separated; no reasonable excuse can, therefore, be made for suffering the land to be occupied by such pests, to the detriment of the crop. And now, as to the depth of sowing, and the time. I submitted this question to a few of the members of our Board of Agriculture, and it was the concurrent opinion that two inches was deep enough to deposit the seed. You are aware that in this section of country the general practice is to cover the seed with the plough, and, doubtless, much of it never sees the light, and much also is impaired by the effort to emerge. Since the introduction of the treble plough, an implement of great value, this difficulty has been greatly lessened, for it is now in the power of the farmer to deposit his wheat at the proper depth, in all lands free from grass, and what is of immense consequence, the seeding of the crop is greatly expedited. In reply to the inquiry you make as to the tendency of wheat to change its *character*, colour, &c., under the influence of soil, climate, or either—it is very certain that great changes do take place. Some have ceased to grow white wheat, because in a few years it degenerates to red. The purest, whitest wheat procured for seed will produce one crop to look tolerably well: sow this again and it becomes much darker—and yet again, and it is scarcely distinguishable from red.

"Our salt water lands are those which produce the fine white wheat, and none others in this part of the State; and yet a portion of those are unsuited to its production—and why? I have remarked, that in all soils producing the whitest wheat, the substratum is a rich *unctuous yellow clay*, and the seed should always be selected from such soil, to keep it up to the mark; for portions of the same field will be underlaid by clay of a different colour. The strong white pipe clay, so called, produces heavier wheat, but not so white, and hence the necessity, even on the same farm, of selecting the seed, as above indicated. Many farms bordering on salt water, produce abundant crops of heavy wheat, but not white; and this can only be attributed to the sub-soil; for, in all other respects, as regards fertility, locality, &c., they are equally well situated. Perhaps our agricultural chemists may be able to throw light on this subject. I have not been so fortunate, as yet, to get my soil analyzed.

"Change of seed after a few years on the same farm, seems to be indispensable, otherwise, deterioration will be the inevitable result. Formerly, the old Washington wheat was seeded for very many years without depreciation; but at length it gave way, and there is none left in our midst: a saline atmosphere was indispensable to the production of this wheat. White wheats are more liable to rust than red; but they sell for more money, produce superior flour, and, in lands adapted to their growth, grow more bushels per acre, and consequently, are most valuable.

"And now, as to the best time for seeding wheat. In our climate, Talbot county, Maryland, experience has long since convinced me that the month of October is the true and only proper time for sowing wheat; and in this opinion all of our most intelligent and best practical farmers concur. Those who sow Mediterranean do so in September,

and have done it with impunity for some years; but the ravages of the fly are said to be considerable in the present crop, and have been gradually increasing for several years. If a rain falls early in October, succeeded by a cool change, you may begin the work and go ahead with the best possible chance of escaping injury from the fly. I once waited till the 12th of October, to obtain this change, and had every reason to be satisfied with the result. In general, from the 5th to the 25th of the month, may be regarded as the most favourable for committing the seed to the earth; but if a crop can be seeded in ten days, then from the 10th to the 20th may be deemed, in a series of years, as the most likely to be crowned with success. Finally, Mr. Editor, the quantity per acre for seed is a matter of no small consideration, especially in lands capable of producing abundant crops. I have long been convinced that five pecks of wheat, trod out after the old method, were equivalent to six which have passed through a machine, for seed. Many grains of threshed wheat are partially, or entirely cracked—the ends of others are rubbed too hard to be capable of germination, and an adequate allowance should be made therefor. This allowance is not made by many farmers; and some of these injured grains possess, too, a small principle of vitality, and necessarily produce poor, spindling plants, whose product spoils the beauty of the sample of wheat, if, indeed, they should escape passing through the screen, in the process of winnowing. Allow me to strengthen my position by a brief quotation from an English work which you have republished—I mean *Stephen's Book of the Farm*, p. 28 (1490).*

* Note.—*From Skinner's edition of Stephen's Book of the Farm.*—Seed-wheat should be *pickled*, that is, subjected to a preparation in a certain kind of liquor, before it is sown, in order to insure it against the attack of a certain disease in the ensuing summer called *smut*, which renders the crop comparatively worthless. Some farmers affect to laugh at this precaution, as originating in a nonsensical faith in an imaginary specific; but the existence of smut and its baneful effects upon the wheat crop are no imaginary inventions, and when experience has proved, in numberless instances, that the application of a steep has the effect of warding off the evils of smut, the little trouble which pickling imposes may surely be undertaken, rather than the whole crop be put in jeopardy. *Why* pickling *now* should have the effect of preventing the smut at a *future* period is a different question; and it is perhaps because this question has not hitherto been satisfactorily answered, that pickling is thought lightly of by some farmers, rather than because any valid objection can be urged against its practice. Indeed there cannot, for the palpable fact stands obvious to conviction, that one field sown with pickled wheat, and managed in the usual way, will escape the smut, while an adjoining one, managed in exactly a similar manner, but sown with plain wheat, will be almost destroyed with the disease. I have seen this identical case tried by two neighbouring farmers, the Messrs. Fenton, late tenants of Nevay and Eassie, in Forfarshire. It is true that, on some farms, wheat sown in a plain state escapes the disease, as I have heard Mr. Oliver, Lochend, near Edinburgh, state is the case with his farm; and it is also true that pickling does not *entirely* prevent the recurrence of the disease on other farms; but such cases are exceptions to the rule, which is, if wheat is not pickled it *may* be smutted; at least no one can aver beforehand that it *shall not* be so; and while uncertainty exists in the recurrence of a serious disease, the *safer* practice is to bestow the trouble of pickling, the expense being very trifling, rather than incur the risk of disease. It is now a well-ascertained fact that inoculation will not insure immunity from small-pox, yet it will certainly modify the attack when it occurs, and so it is with the case of pickling wheat; and as long as means are used to ward off small-pox, so long also, from analogy, ought wheat to be pickled.

Wheat is pickled in this way. For some days, say two or three weeks, let one of the tubs referred to (in 1229) be placed to receive a quantity of chamber lye, and whenever ammonia is felt to be disengaging itself freely from the lye, it is ready for use. It is better that the effluvium be so strong as to smart the eyes, and water added to dilute the liquor, than that the lye be used fresh. This tub should be removed to the straw-barn, as also the wheat to be pickled, and part of the floor swept *clean*, to be ready for the reception of the wheat. Let two baskets be provided, capable of holding easily about half a bushel of wheat each, having handles raised upright on their rims. Pour the wheat into the baskets from the sacks, and dip each basketful of wheat into the tub of lye as far down as completely to cover the wheat, the upright handles of the baskets preventing the hands of the operator being immersed in the lye. After remaining in the liquor for two or three seconds, lift the basket up to drip the surplus lye again into the tub, and then place it upon two sticks over an empty tub, to drip still more till another basketful is ready to be dripped. Then empty the dripped basket of its wheat on the floor, and as every basketful is emptied, let a person spread, by riddling through a barn wheat-riddle, a little slaked caustic lime upon the wheat. Thus basketful after basketful of the wheat is pickled till it is all emptied on the floor, when the pickled and limed heap is turned over and over again till the whole mass appears uniform. The mixing by turning is most surely managed in this way. Let two men be each provided with a barn shovel, and let one stand on each side of the heap, one with his shovel in the right and the other with his in the left hand; let both make their shovels meet in their edges upon the floor, under one end of the heap of wheat, and each,

For seed, the dimpled end of the grain should be distinctly marked, and the site from which the rootlets issue should be rather prominent, and the end from which the blade springs should be covered with a slight degree of wooliness or hairiness. The protuberances of the rootlets and woolly ends should not have been *rubbed off by any process*, such as sheeling, as the grain is thereby rendered unfit for seed by being deprived of its vitality.

Before I ever saw the above mentioned book I was entirely satisfied with regard to the facts in the case, and have, accordingly, for years, been in the habit of seeding two bushels per acre—and this, too, after the most thorough cleaning—and have never yet seen my wheat too thick—aye, hardly thick enough. Mr. Editor, you know that this matter of thick and thin seeding is a mooted question, and while "*non nostrum tantas componere lites*," I have arrived at the conclusion that thick seeding is best, because it affords "scope and verge" for the ravages of the Hessian fly—unhappily, not often sufficient—as well as for those defective grains, incapable of germination.

I have thus answered, in my humble way, the several questions on which you have invited my views: whether they may be useful to any of the peaceful cultivators of the soil is a question I shall not presume to determine.

I am, very truly, yours, N. GOLDSBOROUGH.

P. S. A couple of bushels of Turk's Island salt will be sufficient for a large crop. The brine may be used again, and again till used up. Many mistakes have been made about this matter—too long in soak—*vide Patent Office Reports—cum multis aliis, vale.*

MARBLE LIME.

We have been shown a portion of lime taken from a kiln recently burned by John H. McCue, Esq., near Fishersville, in this county, from stone which is nearly pure variegated marble, and we feel free to say that it far surpasses anything of the kind we have ever seen. It is so fine and pure that its colour is an intense white—and we have been credibly informed that one bushel is equal to three of the ordinary kind. Mr. McCue has erected a large furnace capable of burning one thousand bushels at a time; and we doubt not that when the railroad is completed, "Augusta Marble Lime" will become a great staple of export from the county.

Augusta is rich in minerals, and it is to be hoped that they will shortly be more fully developed.

The above is from the Virginia Messenger, published at Staunton.

Until her mountains shall have been penetrated by railroads and canals no man can begin to imagine the resources that lie embedded in the bowels of that State, for giving employment and sustenance to the millions of active, industrious, and prosperous people, by whom it would have been inhabited before now if, when we threw off nominally our political dependence on Mother England, she had not retained us practically in *colonial bondage.* True, we extorted from her verbal acknowledgment of our right to make our own laws; but we were so elated at that, that we remained to such a degree dependent

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on lifting his shovelful, turn it over behind him, and thus proceed, shovelful after shovelful, to the other end of the heap. Let them return in a similar manner in the opposite direction, and aye till the heap of wheat is completely mixed with the lime and lye. The pickled wheat is then sacked up and carried to the field in carts. Other substances beside chamber lye are used for pickling wheat, such as brine of salt, sufficiently strong to float an egg; solution of blue vitriol—all good enough, I dare say, but when so simple and efficient and easily obtained an article as lye can be had, it appears to me unnecessary to employ anything else. It is a powerful ingredient, destroying vegetable life in the course of a few hours, and it is perhaps to this property that is to be ascribed its efficacy as a protection against the attack of that vegetable enemy of the wheat-crop—the smut. The wheat pickled with it should therefore be used immediately after the process; and as danger may be apprehended to pickled wheat being kept over night, the quantity pickled should be sown at once, and no more should be pickled at one time than can immediately be sown. The use of the quicklime seems to be to dry the lye quickly, so that the grains may be easily separated from one another in the act of sowing; but there may some chemical change arise between them in the circumstances, which may be serviceable to the purpose for which both are employed. Can it be that the lime fixes the ammonia of the lye, and preserves it for use until wanted by the plant or seed?

☞ Cost of English copy of this work from Booksellers when imported, $25; sold by J. S. Skinner, from his stereotype plates, with his notes, for $5.

on her still for manufacturing our raw materials, that the Edinburgh Review has but lately avowed that "*the United States of America are but colonies of England in a matured state!*"

Yes—if we would once unite and say, we will compel those who manufacture for us, the articles of which we have the raw materials, or the capacity to produce them, to come and reside here and manufacture them where we have the steam and the water power—the coal, the iron, the cotton, and the wool—the leather and the timber—the lime and the materials for glass ware, and earthen ware, and iron ware, and wooden ware; if we would once unite and proclaim our determination to do that, as the settled and irrevocable policy *of the people* and the government—Virginia, above all States in the Union, would soon teem with millions of people engaged in other pursuits; demanding the produce of her fields and gardens, and orchards and dairies, and forests and mines, and quarries of coal and iron, and lime and marble, and granite and timber. Having the advantage in the start, she ought to have been, and under such a policy would have been, this day, the most populous, and powerful, and prosperous State in the Union. She would be in no want of "Agricultural Conventions" at Richmond, that come and go every ten or fifteen years, like the ghosts in Hamlet—"honest" ghosts, intending well, but realizing nothing, for want of that *substantial, all-pervading, permanent* guarantee for a prosperous agriculture, which is *only* to be found in the *presence of other prosperous industries*. Insure that, and you insure *all the rest*. Then will come schools and education—cultivation of the mind and cultivation of the land. This is what Virginia, above all States in the Union, demands for her advancement in everything, and this is what, above all States, she has the means and the power to realize; yet above all States she has stood most in the way of this glorious consummation, so devoutly to be wished. If her statesmen would but unite in carrying out this policy, she would soon supply the capital; and the enterprise for direct steam communication from the Chesapeake to the shores of Europe, and millions of hardy operatives, accustomed to labour and skilled in every trade, would come to swarm like hives of industrious bees about her mountain mines and water powers, and along her mountain valleys. The first settlers would send "home" to those they left behind, certificates of the extraordinary healthiness of her climate, the fertility of her soil, the richness of her mines and her forests, and the exhaustless extent of her water power. In place of all which, what is now her position? With all her incalculable and glorious advantages, almost as much cut off from a knowledge of them by the world as if they were in the moon—instead of being, as they are, within forty-eight hours of the ocean, and lying in the most healthful and delicious climate in the world—for no part of Italy itself can excel, in this respect, the high lands of Virginia, North and South Carolina, Georgia, Kentucky, Tennessee, and Alabama.

And why should not the oppressed and downtrodden European operatives, whose labour now supplies us annually with one hundred millions of foreign manufactures, of iron and cloth, and silk and wine, and cutlery and haberdashery, &c., be living in that region, enjoying liberty, abundance, and health, supplying and supplied, by the American Farmer and the Planter on the spot? It was, to speak our own conviction of the soundness of such a policy, and how *indispensable to the welfare* of agriculture is its establishment—it was, we say, for this chiefly, that we undertook, at this time of life, and in the face of so much opposition, to establish "THE PLOUGH, THE LOOM, AND THE ANVIL." The very first twenty-four pages of this journal were appropriated to showing "*the reciprocal relations of Agriculture, and the other branches of American domestic industry.*" In fact it was in this way only that we could hope to be instrumental in the permanent improvement

of agriculture. It was impossible for any language to be more explicit, and yet the Editor of "The Democrat," published at Abingdon, Virginia, in an otherwise very kind and respectful notice, for which we are unfeignedly grateful, seems to think that the *political economy* of agriculture has been, as it were, surreptitiously introduced into this journal! The fact is we have nothing to do with politics in any other way or in any other light. We care not a fig for one "party" more than another, except as they act on this point, in a manner that, in our conscience and according to the lights of our best judgment, we believe to be absolutely indispensable to a permanent, steady, and reliable market for our agricultural produce, which, being secured, all is secured that human wisdom and industry can do—but which, not being secured, agriculture can never attain that degree of improvement and prosperity, for which nature has provided all the essential materials.

With a force of truth in every word, as pure as double refined gold, Mr. Carey says—"The nearer the place of conversion (Manufacture) can be brought to the place of production, the less will be the necessity for the transportation, the more steady will be the demand for labour throughout the year, the larger will be the quantity of labour that may be given to the work of production, the better will the labourer be paid and clothed, and the more rapid will be the accumulation of wealth in the form of machinery to be used in the further increase of production."

The French have a saying—*L'homme propose, mais Dieu dispose.* Man proposes, but God disposes. God has so disposed and arranged the elements of prosperous growth in the States we have mentioned, and especially for the people of Virginia, that they ought to be pre-eminent in all that constitutes greatness—but behold her importing, every year, millions, for which she has materials in superabundance *on the spot*, because, for the moment, she can buy cheaper articles made abroad, by people who live as described already in *this number*, at pages 69, 70, 71, 72, 73, to which we entreat our friend the editor of "The Democrat," to turn back, and then say whether it is best for the American Farmer and Planter to have his cloth and iron made by people who live thus, three thousand miles away, or by persons at the loom and the anvil in our own country, near to our own ploughs, where they would not only be *certain*, but *able customers* of the Farmer and the Planter—and yet it is for maintaining this doctrine that many are writing, as for example :—

Post Office, *County, Ohio.*

"*Dear Sir*—I am desired to instruct you to discontinue 'the Plough, the Loom, and the Anvil,' to the following (six) persons. Now this I admit is a *shame*—some plead poverty and some *locofocoism.* Enclosed I hand you fourteen dollars, for which you will send your next volume to the following named (seven) persons."

Now to the man who pleads poverty, we would unfeignedly rejoice if we could afford it, to send it gratis, but it staggers our faith to believe, that any man can be made poorer by giving three bushels of wheat for three times three hundred pages of valuable matter, relating to the economy or practice of his profession. And as for the locofocoism, why don't they refute, instead of refusing to read? or are they afraid of being persuaded that it is better to study the interests of one's country, than the interests of party—be it what party it may? Don't we let our readers have both sides? Look at Mr. Williams' criticism on our doctrine from the Ohio Cultivator, in this number. Our correspondent above inquires, if we will be at the State Fair in Cincinnati? We can only say *we'll "try."*

Cozzens' Hotel, *West Point*, July 10th, 1850.

HEAR BOTH SIDES.

In conformity with our uniform practice of letting our reader see both sides of the question, we give the annexed letter from the *Ohio Cultivator*, in reference to the doctrine we have undertaken to teach the farmer, to wit: that if he would grow rich and independent *he must make a market on the land for the products of the land.*

Our critic informs his readers that "improvements in machinery have come to our rescue," but he *does not* inform them that we should have had *no* machinery *but for protection*, fluctuating and inadequate as it has been. If he doubt the fact, let him look to the *unprotected* Canadian, and inquire where is *his* improved machinery, and the answer will be "nowhere!" The Canadian has none, and therefore it is that he is begging for permission to sell his wool and his wheat in our *protected* market, when he has open to him "the great grain market of the world," to obtain which we have closed our mines, and furnaces, and mills, and driven out our miners and furnacemen to go west, there to raise food for themselves.

The domestic market *is* large, but it is decreasing, because such men as the writer of this letter prefer to compel "the poor Spitalsfield weaver," and the poor "female operative" to remain at home to "starve," although willing to support themselves by "honest industry," instead of permitting them to come here and become large and well fed customers to "the Ohio farmer." If our critic desire evidence that such is the result of the system which he is disposed to regard as free trade—but which consists in keeping the consumer and the producer at a distance from each other—he may find it in the following facts:—

Under the protective tariff of 1828 immigration to our country *trebled.*

Under the compromise tariff it became stationary.

Under the protective tariff of 1842 it again *trebled.*

From 1847 to 1849 it grew slowly, comparatively speaking, and it is now in like manner diminishing, as will be seen by the following statement of the arrivals of aliens at some of the principal ports of North America:—

		1849.	1850.
New York,	February	8,819	3,206
" "	March	9,530	5,567
" "	April	19,924	14,627
" "	May	37,417	42,846
" "	June	28,975	11,734
Philadelphia,	six months	7,419	4,619
		112,084	82,599

At Boston the falling off has been about one-sixth.

The average reduction has been about twenty-five per cent., and thus has immigration gone back to where it stood in the year 1846–7, when it would have *trebled* had the tariff of 1842 been permitted to remain. We should be glad if our friend would reflect how many "poor Spitalsfield weavers," and poorer "female operatives" would have been enabled to make this their home had we not produced a policy that has closed, or is closing all the mills and furnaces of the Union; and how much the Ohio farmer has gained by *shutting out* the hundreds of thousands of miners, and furnacemen, and operatives of all kinds that would have come here to eat his food, had they been permitted to do so. *Common sense* teaches that the man who comes where food is cheap is a large customer to the farmer. *Uncommon sense* teaches that he who remains

where food is rendered dear by the necessity for giving to wagoners, boatmen, commission merchants, sailors, and traders of all kinds, two-thirds of what they transport for the work of transporting it, is a better customer. Unhappily, however, for the *uncommon sense men*, the Spitalsfield weaver obtains little food for his labour, and the farmer little of his cloth for his food. We should be glad if our critic would calculate the quantity of American food that would be consumed by an operative in Steubenville, when engaged in converting wool into cloth for "the Ohio farmer," and then calculate how much would be consumed by one similarly engaged in Manchester, and see if the *one man here* would not make a larger market than *one hundred men there.* Let him do that, and then let him ascertain if there is any reason to believe that "the great grain market of the world" will furnish this year a market for a single bushel of Ohio wheat or corn, or a single pound of wool; and if there is not, on the contrary, an *absolute certainty* that if the *farmer* did not enjoy protection, there would be large imports of cheap grain and cheap wool into the Union. It is really time that gentlemen who undertake to instruct the world on this important fact should relinquish the practice of retailing the teachings of English political economists, and study for themselves the facts occurring round them.

LETTER FROM SAMUEL WILLIAMS.

TARIFF AND FREE TRADE DOCTRINES.

(From the Ohio Cultivator.)

WATERLOO, N. Y., *April*, 23, 1850.

M. B. BATEMAN, Esq.—I see that the masterly editor of "The Plough, Loom, and Anvil," advocates in your paper the importance of a prohibitory tariff of duties on railroad iron, &c., as the true means of giving to the Ohio farmers a better home market for their productions.

The day was when I could endorse every word that this veteran writer has said in the premises; but custom and experience has long since disabused me as to the true meaning of that very equivocal and often misconstrued word, *protection.* The Ohio farmer "needs not that any man teach him;" his daily life from youth up proves the fact, that well directed, intelligent industry, economy, and self-reliance, is the only true and legitimate God given protection to his industry. All the experience of our cotton manufacturers proves that each increase of a tariff for protection, from 1815 to 1833, added only to the increase of useless or extravagant expenditure, inordinate outlay, bad, reckless economy, and consequent bankruptcy and ruin. When the last reiterated demand for another increase of tariff was made on Congress, even Mr. Clay ceased from his cotton bagging protection speeches, and Mr. Calhoun, who had generously voted the first tax, began now to breathe nullification! But industry, economy, cheaper living, and improvements in machinery came at length to the rescue; and our manufacturers have now become exporters to the amount of millions of dollars! So far from our agricultural products being depressed for the want of a sufficient home market, the history of the civilized world cannot exhibit the example of a home trade so rapidly extending and increasing as ours! As to manufacturers: did any country under the sun ever increase faster in manufacturing industry than these United States? and, strange as it may seem, those arts which have received no bounty in the shape of protective tariffs have flourished most! Our ship builders have made ships of war and steam frigates for the Czar of Russia, and the Grand Turk. Our engineers construct their railroads, and our workshops supply them with steam engines, &c. Yet these arts have grown up without other protection than that which is the birthright of every Ohio farmer, industry, economy, and self-reliance.

'Tis true that our import of the more luxurious fabrics from Europe is great, and, if you please, alarmingly increasing; but it is in such articles as do not come in direct competition with our own established trades and manufactures. This great increase of imported luxuries can only be referred to, and is only chargeable upon the astonishing pecuniary prosperity, and consequent showy civilization of young America! But is not this all right in the great scale of universal philanthropy? *Who grudges the poor Spitalsfield silk weaver that weekly pittance which feeds his little ones;* or who would starve, by turning from honest industry, the millions of European female operatives, who live by their own handiwork; certainly not an Ohio farmer, a sovereign of the soil, now in the full fruition of every blessing, moral, physical, and spiritual.

ON THE CAPABILITIES OF MONTGOMERY COUNTY—MARYLAND.

SUMMIT LEVEL, 12*th March*, 1850.

MR. PRESIDENT:—Amongst the numerous essays written on the agricultural productions of our country, I have not observed a full statistical statement of our natural resources. The idea has occurred to me to embody a few of the many resources and advantages possessed by our county, hoping to see from competent hands at some future day a full and correct detail. With this apology for my limited means of accurate information, I have detailed some facts, rather imperfectly obtained, of the resources and advantages we possess. Believing that a brighter day is about to dawn on our agricultural and manufacturing interests, which I consider inseparable, the points I shall refer to are our geographical, agricultural, and water power, with some miscellaneous remarks.

First, by our geographical position, we are the nearest of the counties, west of Washington city, to tide water and the District of Columbia. The elevated ranges or spurs of the Parr's ridge extending through our county, having an elevation of about 700 feet down to lower levels, gives us that fine diversity of hill and valley, pure water, noble streams, healthy air, and beautiful ladies. The facilities of transportation by canal, railroads, and wagons, to the District and Baltimore markets, give superior advantages to our agriculture, whilst the water power for manufacturing purposes, if equalled, is not surpassed by any other county of the State. The lower counties of Maryland afford but small water power compared with our own, the dividing ridges between the principal streams being too low to give rise to large streams with sufficient fall for manufacturing purposes, especially during the long dry months of summer.

Secondly, our agriculture, through the exhausting cultivation of the soil, has given an unfavourable appearance to agricultural interests, which the successful improvements of our enterprising farmers are about to dispel, and show the undeveloped resources we possess, and where but one barrel of corn was raised to the acre, sixteen have, by improved lands and cultivation, succeeded, leaving the inference clear that the average yield of grain crops, on improved lands, would be at least twenty or more bushels to the acre. Therefore, assuming twenty bushels as the least average yield, I proceed to the following calculations. Our county is supposed to contain between 500 and 600 square miles: taking the lowest number, 500, and that each square mile contains 640 acres, would give 320,000 acres. Allowing one-third, or 106,666 to be wood and waste lands, and that the other third of 106,666 acres be appropriated to pasture, hay, and root crops, the remaining third of 106,666 acres, at twenty bushels to the acre, would amount to 2,133,320 bushels. Allowing one-third for stock, would leave 1,422,214 bushels for breadstuff; and supposing each person to consume fourteen bushels annually, would feed a population of more than 100,000. Estimating the present population at 10,000, would give twenty inhabitants to the square mile. Supposing the improved condition of the soil described, it is thus shown that in the place of the present population, 100,000, or 200 inhabitants to the square mile, might be as well or better supported. I believe the above estimates to be far below the capabilities of the county when properly developed by improved cultivation.

Whether the resources of the county will ever be made available, depends on the interest its population shall take in their development. My object is to show that the agricultural resources exist, as well as the superabundant water power I am about to describe.

[Here the writer gives an estimate of the number of feet fall, but not the volume, of the various streams in the county, "from the survey made in the summer of 1838, for the then contemplated cross-cut canal from the mouth of Seneca to Baltimore." In this estimate he says, "I have commenced the fall of water at the points where the streams become available for manufacturing purposes, the greatest elevations of available water power being about 450 feet above tide." We omit, for want of space, these local details, as respects each particular stream, the following recapitulation being sufficient for the general, if not for the local reader:—]

Seneca and its tributaries,	850
Patuxent and its tributaries in this county,	450
Rock creek and its tributaries,	500
North-west branch in this county,	100
Muddy branch,	200
Watts' branch,	150
Cabin John,	150
Small streams between Cabin John and District,	100
Bennet's creek, Little Monocacy, and smaller streams running to Monocacy and Potomac,	300
The Potomac from its entrance in the county to its termination at tide,	150
	2950

Thus giving a general aggregate of 2950 feet of available water power for the county. Allowing twenty feet fall for each, would give sites for 147 mills, factories, or any purpose water power may be required for.* As my object is to show that there exists an excess of water power in the county beyond all probable demand, I have given the fall of the tributaries far below their available power. For instance, the Wheatstone, uniting with the Seneca at Middlebrook, has an actual fall, by correct measurement, of over 100 feet, though I have estimated it at only half that amount. So that in the place of the estimate above, I believe 4000 feet of available water power to be nearer correct. General purposes being my object, I have shown that whenever capitalists find it a profitable investment of money, the manufacturing facilities exist to an indefinite amount. The great falls of Potomac, Rock creek, and the North-west branch, afford the only means of giving a natural flow of water to Washington. Should the demand for such supplies of water as the Croton aqueduct affords to New York, be required for Washington, these sources will have to be relied upon, and could be conveyed to Washington by less than half the distance of the Croton aqueduct. In such an event, Rock creek will probably present superior advantages. The fall and volume of water being much less in the North-west branch than Rock creek, though nearest to Washington. The Potomac at the great falls has less elevation—difficult river banks, and the canal already occupying its margin. From the sources of the east and west forks of Rock creek to their junction, they drain an area of about thirty square miles. A reservoir constructed where they unite, connected with an aqueduct at the base, would be about 200 feet above tide at Washington, and about fifteen miles distant.

It is unnecessary to detail the application of the water power of the county to other purposes; such as irrigation, &c. A superficial glance is sufficient to show that we possess water advantages of no ordinary kind. The difficulty is not in the lack of matter, but in condensing it.

* With power to propel how many spindles or pairs of stones? in each case, or in the aggregate?—EDIT. P. L. AND A.

I shall close my communication with a few miscellaneous remarks. With such resources as I have described, well may we feel the importance of our position. Having every natural advantage, it remains to be seen whether the enterprise of our citizens is adequate to the improvement so nobly commenced by the few who are leading the van of successful cultivation. It is said that there are individuals raised and living within hearing of Niagara, that have never seen this wonder of the Western hemisphere, which has caused others to cross the Atlantic to behold it; and doubtless there are individuals of other lands, with the map of our country before them, resting their eyes on our location with more interest than is felt by many of our own citizens. The central position of Washington, and the vast improvements completed and contemplated, mark its present and future greatness as it steadily progresses in uninterrupted prosperity; our proximity giving us all the advantages of markets, trade, and literary improvement.

It must be admitted, that the parts of the county bordering on the canal district, Patuxent, and near Monocacy, possess greater facilities for procuring lime than the more central parts; and points out the necessity of using guano, bone-dust, and other fertilizers more portable than lime where transportation is difficult. Fortunately, the light red clay soils of the interior are admirably adapted to the light fertilizers mentioned.

One of the difficulties to the improvement of our soil is found in the unwillingness of our young men to engage in a life of patient labour; and until labour and the mechanic arts are appreciated by the undiscerning, it will require a stern moral firmness to rise above vulgar prejudice. Hence, our young men seize with avidity the least inducement that promises some temporary profit or honour, without regard to their future happiness. That the material exists in our own population, is manifest from the improvement made wherever patient industry and judgment are applied to renovate the soil. The flower of our young men, leaving their homes of plenty to die in a distant clime, is a sad commentary on their attachment to their native soil. That they possess energy and enterprise capable of great results is evident. Our country felt a glow of enthusiasm at the recital of the hardships and bravery shown by our hitherto obscure young men led by the veterans Scott and Taylor, storming batteries, and taking the last and greatest city of Mexico: could the same desire to cultivate the soil be infused, we might expect and realize a rich and lasting benefit, and no longer behold the desertion of firesides to go on distant and doubtful expeditions.* Whether pride, false shame,

* It is not want of industry, nor want of knowledge, that retards the growth of population and improvement in Montgomery County, in a manner corresponding with her natural advantages of health, improveable soil, and water power. The people of that county are not behind any other community in the Union, for knowing *how* to make—what they need is a remunerating market near at hand, *whereat to sell!* Their water power will never avail them, while they give themselves up to *party* politics, instead of *the true politics of the plough;* while they are content to send to England for cloth and iron, and to France for silks and wines, instead of compelling (as far as their power goes) Congress to enact such a tariff as shall force the half-starved European labourers engaged in making cloth and iron and silks and wines, to come and make them all here—at a higher cost, if you will, in the *first instance*, to the Planters and the Farmer, of the cloth and the iron and the silk and the wine; but that higher cost would be tenfold compensated for, by transferring and converting these half-starved millions in Europe, to be here, in our own country, well paid, willing and profuse consumers of the produce of American ploughs. When, in addition to this, the Farmers of Montgomery County, uniting with the Farmers and Planters of all other counties, shall have compelled their law makers to appropriate money for schools to teach the art of *production*, as well as the *great popular art of shedding blood*, then will population thicken, for then they will have people, near at hand, to demand potatoes and beef and mutton and cabbage, which being fed upon the land, return upon the land, the refuse of its products; instead of relying as now, on crops that are to be sold and consumed abroad—crops that return little to the land, and compel those who notice them to go abroad in search of customers they know not where, and for foreign manures.

an unwillingness to labour, dissipation, or extravagance, or all united, has caused the present sterility of our soil, I shall not undertake to determine; but I think, with the Honourable Mr. Whittlesey, in his late agricultural address, that in the place of mahogany sideboards, china, and plate, something more useful was needed; or that the money realized from the sale of tobacco, that exhausted the soil, should have been applied to articles of necessity, and not of luxury. JOHN T. DESELLUM.

Mr. A. B. Davis,

President of the M. C. Agricultural Society.

THE MARYLAND AGRICULTURAL COMMITTEE—ITS ACTION AND ITS DUTIES.

The Committee on Agriculture in the Maryland Legislature, to whom was referred the memorial on the subject of a law to prevent *the destruction of sheep* by dogs, consisted of Messrs. Weems, Bravard, Bowie, Tilghman, Lloyd, Kent, and Smith of Washington: all, all honourable men; but as *Legislators*—vigilant to see what could be done for the *agriculture of the State*, this deponent saith not. A committee expressly appointed to investigate and guard a particular branch of industry, and to see what is necessary for its development to the utmost perfection to which we have the resources to carry it, ought not, in our judgment, to wait for external suggestions of measures for its benefit. To make such suggestions, especially as they relate to agriculture, is everybody's business and nobody's—and it needs no Solomon to tell, what always happens in such cases. It is to *inquire* into the condition of such branches of industry, and to see how they may be improved—that standing committees are appointed at the commencement of each session; and it is their duty, not to sit there waiting, drawing their *per diem* and sucking their thumbs, until prompted and pricked on by special instances to their duty. Their care and their pride should be, like that of a grand jury, "diligently to inquire and a true presentment make," of the state and prospects, the grievances and the wants of the class whose interests they have had the high honour of having committed to their charge; and when agriculturists shall have come, if ever, to be *appropriately educated*, and to contract, as in that case they would, an enlightened preference for such investigations and studies as throw light upon *their own pursuit*, then will they learn to "act in a body" at the election! Then will a huckstering party spirit for the sake of power and the spoils, give place to an enlarged public spirit, and then will Agricultural Committees be taught, that if other classes need the attention of legislators, whose thoughts and whose acts they now engross, so does that great class, the cultivators of the soil, on whose labour these others prey and live, as parasitical fungi on more useful bodies. Then, when appropriate education shall have been established at the public expense for the plough, as it is now secured for the sword, will the useful industry of the country be enlightened and disciplined, as General Jessup said he could, in ninety days, discipline the militia of the

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If, in a word, they will read and practice upon the *doctrine we are preaching*, it will do more to enrich their land and thicken their population, than all the essays we could print or they could read, from now till doomsday. Or do they need to read again, the lessons taught them thirty years ago theoretically and practically by Thomas Moore and Roger Brooke, on deep and subsoil ploughing? If they think *that* would do them any good—make their poor land rich, and their country populous, we could take an old volume of the American Farmer, some twenty-five or thirty years old, and re-preach to them again, sermons we preached then, all about the use and value of bones, lime, guano, irrigation, plaster, &c. But instead of that, or besides that, we take it what they want is (as it is admitted they have the *buenos ayres* and the water power) the policy that shall draw, nay, that shall, by the most universal of all forces, self-interest, compel consumers to come within their borders and use their water power and enjoy their salubrious climate. That is what they want, and what the whole country wants. But for saying so, and telling them the plain truth, we who have been labouring day in and day out, for more than thirty years, to advance their interests, we are intermeddling too much in party politics forsooth! The very thought of which, *in the usual acceptation of the term*, we hold in utter contempt. For ourselves, we shall do and say what we believe to be *best for the cultivators of the soil*, and for the rest—trust to Providence. Men may withdraw their support, and ignorance, that dare not argue, may refuse to read; we may even be thrown at last upon the Parish, but we shall make a hard fight, nor call upon Hercules until all acknowledge we have first *put our own shoulder to the wheel!—Edit. P. L. & A.*

Roswell House, *Paterson, N. J.*, June 30, 1850.

United States under the êleves of our military schools; and then will the world dispense with armies and navies, emblematic relics of barbarous times, and too often instruments of rapacity and oppression. In this case, however, a most respectable committee, headed by the president of the society, waited on the committee and urged the adoption of some measure to remove the great and acknowledged impediment to the extension of a branch of husbandry, which but for that impediment would be one of the most fruitful sources of national income. A branch even yet destined to be of incalculable importance.

We had, it seems, been erroneously informed that this agricultural committee made no report whatever on the anti-sheep-killing dog memorial, whereas, as we since learn, it was not quite so bad as that, for they reported, as we are now told, that it was *inexpedient* to grant the prayer of the memorialists, or to that effect. We have in vain endeavoured to get the exact terms of the report; but be it what it may, to have reported at all, warrants the presumption that the subject was matter of deliberation; and what we and the agriculturists of the State may well be curious to know, is the train of laborious investigation which conducted them to the conclusion that this great and acknowledged evil, under which the State sustains an annual loss of some hundred thousand dollars, is *without a remedy!* Will some one give us the arguments that swayed the committee? Which had most weight—the desire to serve and conciliate the owners of land, or the owners of dogs? Was it that they knew that those who follow the plough will always follow the bell-wether of their *party;* while those who are followed by dogs are a floating population, ready to vote against any one who would restrict them in keeping as many curs as they please? Ah! but a better time is coming. We are going to have "the profession act in a body *before* the next election!" So has it been formally "resolved!"

Will the Committee of Agriculture in Virginia, or that of Maryland, who deemed it inexpedient to recommend any legislative action to restrain the ravages of sheep-killing dogs (many of these dogs belonging to sheep-stealers, black and white), will they tell us how it is, that in the State of New York, where land is generally so much higher in price, they should raise more sheep, clip more wool, build three times as many woollen factories, and manufacture ten times as much woollen cloth as all Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Tennessee and Kentucky, united? Ask the landholders of these States, and nine out of ten will tell you he would increase his flocks, were it not for the *certainty of having them destroyed by dogs!* In place of the less than five millions of sheep now kept in these States, there is *waste* land enough, well adapted for sheep pasture, to keep twenty millions. Heavily as the committee tasked itself to see how they could develope and improve the agricultural capabilities of Maryland, we should think this problem was well worthy, as the diplomatists say, of their "most profound consideration!"

Moreover, a most respectable committee of the State Agricultural Society had asked emphatically—"Can it be possible, that in a country where equal rights are guaranteed to all, that a large and highly respectable class of citizens shall be subjected to heavy losses, merely for the gratification of a brother to unrestrained propensity [to keep superfluous dogs] not essential either to personal comfort, or productive of any real benefit?"

The Editor of the Pittsfield (Mass.) Culturist enters, in his last paper, into a calculation, which convinces him that wool growing, even in that State, would be more profitable than raising wheat, at twenty bushels to the acre, or making cheese at 300 pounds to the cow. We wonder what he would say on a calculation of ten bushels of wheat to the acre, and the equivalent of 150 pounds of cheese to the cow, which exceed the average of these productions in Maryland and Virginia? He puts the cost of wheat, however, at five dollars the acre. We should be glad to have a report from "the Largest Wheat-grower in Delaware," or from the Agricultural Society of Talbot county, as to what is supposed there to be the fair *cost per acre*, in the manufacture of wheat, placed in the hands of the Baltimore miller; for after all, it is as much a manufacture (with the land for the machine) as is a ton of iron, or a yard of cloth. Let us have, too, for curiosity and practical information, the *items* of the calculation; for surely we have a right to presume that such calculations *are* minutely and carefully made by every farmer, whose labour and capital are embarked in this pursuit, or ☞ is it that, the want of such calculations lead them, just as much as it would do merchants, to become bankrupt and sell out before they know what hurts them? ☜

We have a letter before us from a large wool dealer of much experience, in Baltimore, who says: "As I remarked, before we can expect Maryland to be much of a wool growing State, we must be protected by law, against the ravages of so many sheep-killing dogs. I am informed that several farmers have given up keeping sheep for that very reason."

Now, nobody need tell us, for right well do we know, that strictures like these, upon the conduct and duties of public men, neither get subscribers nor make friends; though they are in nowise incompatible with personal respect, nor so designed in this case; and as for the *party* to which these gentlemen belong, we despise the thought of any such consideration when the welfare of a great interest is involved. We neither know nor care who of them belong to one party or the other. In such cases, legislators should belong to no party. For ourselves, we were reared in the democratic-republican school —we belong to it still, *according to our understanding* of its true creed; but for men and politicians, we are determined to go for those, irrespective of party *names*, who are for taking care of *the industrial pursuits of our country;* and especially of its *agriculture;* which is blended and bound up with all other industries: for in fact we cordially believe in the truth of Governor Hammond's declaration, that "if, guided by the light of history, we look back over the long track of time, we shall find that no nation, devoted exclusively to one pursuit, has been prosperous or powerful for any extended period."

In this, as in many other cases, were we, as we have said before, to consult our interests, depending, as we are, exclusively for bread on the patronage of this journal, we might paint everything *couleur de rose*—flatter when we could and lay dark when we could not; but, as we have said before, ☞ when a man takes the bounty, *ought he not to be ready to fight?*

CROPS OF INDIAN CORN TWENTY-SEVEN YEARS AGO.

Authentic evidence was exhibited, in 1823, of the following products to the Washington county (Pa.) Agricultural Society:—

	Bushels per acre.
Joseph Evans	136
John Wolf	127½
Samuel Anderson	123—12 quarts.
Isaac Vanerokens	120
Isaac Buckingham	118—1 quart.
James Clakey	113
Jesse Cooper	108
De Gross Jennings	120

The above is a true transcript.

JOHN H. EWING, *Sec'y.*

None of the competitors under 100 bushels seem to have thought it reputable to have their names on the list — *hence*, What is most needed for the people of Washington county? Information how to make corn, or a sure market at home for the sale of it?— Edit. P. L. and A.

SUGAR.—*New Process in the Manufacture of.*—The following, from a late number of the *Mark-Lane Express*, may have interest for some of our Louisiana friends. Let us, by the way, inquire why it is that we meet with so little encouragement in that quarter? Is it that we have demonstrated that now they give five bales of cotton in exchange for one, whereas they ought to give but three, if they would force the loom to come to the cotton, instead of sending their cotton to the looms at Manchester?

Mark-Lane Express, London, 10*th June*, 1850.

Sugar.—Several samples of sugar, of a very superior quality as respects granular texture and brightness of colour, have recently attracted considerable attention in the Bristol sugar market, which has led to much inquiry as to the process of manufacture among the merchants and proprietors of West India estates. It appears, from inquiries we have made, that, by a combination of several patents—among others, the cleansing and drying of sugar by centrifugal force—sugar which formerly took three or four weeks to refine, is now done in as many minutes. Sugars heretofore unsaleable in the English market are, by the new process, converted, as if by magic, into an article realizing 36*s*., $8 64 per cwt. The machine by which the process is carried on is very cheap, portable, and easily worked, and the raw produce shipped in a state which prevents the waste of some 12 to 15 per cent. in the shape of leakage from molasses. Next to the discovery of the vacuum pan, the improvement of Messrs. Fingal and Son, of Bristol, ranks first in the scale of importance; and they have happily succeeded in combining the interests of various patents held by Messrs. Seyrig, Hardman, Rotch, and others.

ON THE MODE OF USING GUANO—SOME REMARKS WORTHY OF ATTENTION.

Although we, ourselves, called attention to the value of guano, and gave the analysis of its constituent elements, with directions for the use of it as practised in Peru; and distributed two barrels of the substance in Maryland, 25 years ago, long before it had been tried in England—yet that is the country, at this day, into which the largest quantities have been imported, and where its application to the greatest variety of crops is best understood. We observe, indeed, that seventy-five thousand tons were imported into England in 1849; and these, according to the *London Agricutural Gazette*, have been *done up* into 200,000 tons! In London alone, there are ten houses known to be engaged in this fraudulent manufacture, who are charged with selling $300,000 of *fraud* annually in the name of Peruvian guano. Before the London Farmers' Club, there was, very lately, a discussion "upon high farming, showing how and to what extent, capital can be applied to a given quantity of land, to ensure the greatest amount of profit."

The whole debate is highly interesting, and if we could insert it, every discerning practical farmer might esteem it alone, as worth, if he got nothing else, the three bushels of wheat he gives for a year's subscription to this journal.

From among much other valuable matter suggested, in the course of the discussion refered to, we pick out the following. We should be glad to know whether the experience here given, as to the quantity proper to be applied to grain, and the loss which ensues when that quantity is increased as there stated, corresponds with experience in our country.

The speaker was referring to the general subject of the application of capital, with a view to profit, and said—

"The main features to be attended to are, the producing a large amount of green crops for consumption by cattle and sheep, to make such application of inorganic substances to the soil as may be necessary to insure success—in fact, by the addition of lime, chalk, clay, silica, &c. as may be necessary for the general amelioration of the soil; to apply the manure produced upon the farm with the utmost economy and care, keeping in mind always that two light dressings will at different periods produce a greater return than one heavy one for all grain crops, whilst to green crops it will be necessary to apply manure more bountifully, as no damage will ensue by producing them as fine, and at the same time, abundantly in quantity as possibly may be effected; and as regards the application of guano, it will be found most advantageous to apply it to the production of root and other green crops in preference to grain crops, reserving the farm-yard manure as much as possible for the latter. And it may be worth while here to observe that by a series of experiments communicated to me by a most intelligent cultivator, as well as derived from other sources, it has been found that more than two cwt. of Peruvian guano applied to each statute acre of wheat or barley did not repay the cost of the application, as it was found, in numerous experiments, that as the quantity became increased, the result diminished the quantity of grain, although it would have been considered otherwise, as the straw was materially increased, and by increasing the quantity to four cwt. per acre, no increase whatever in the grain from that where no application of it took place. With grass it was otherwise, and with root crops also; an increase in quantity upon the former produced a greatly increased amount of grass, until the evil was apparent in the opposite direction by the weakness produced in the stems being such as to cause the crops to become lodged, whilst with root crops four cwt. or even five cwt. can be used if applied with advantage, but three cwt. appears to be the quantity that may be used with the greatest advantage; and in every experiment made by myself, when not drilled, I have found the better plan to sow it and cover with a shallow ploughing a few days previous to ploughing for the depositing the seed; by such process, even in dry weather, we need not fear losing the guano by evaporation, as on its being covered in, the ammonia becomes at once fixed and, therefore, not liable to escape."

FRAUD IN GUANO.

We are not aware of any attempts in this country to adulterate guano—though much of an inferior quality has probably been imported, and it is quite probable that many farmers may have bought, unwarily, parcels of African guano, not knowing its inferiority to the Peruvian.

We should apprehend greater damage in buying other prepared manures, as well from the ignorance, as the malevolence of the manufacturer. When men, utterly ignorant of chemistry, and utterly unprepared by previous study or employments, undertake to compound manures as they would make mortar for bricks, there is room for much apprehension, and yet for *one comfort.* It proves the existence of a growing demand, and a growing habit of anxiety on the part of farmers, for the means of returning to the meal tub, something of that which they are constantly taking out of it.

In London, one agent of a house engaged in the manufacture of spurious guano, contracts for the delivery to the house of thirty tons of a *reddish loam* per week. Dr. Lindley, regretting the peculiar liability of gardeners and small farmers to be imposed on in this way, suggests what may afford a hint for American farmers, as follows:—

"What the small people—and they are the sufferers—cannot do, the great people may do for them, and effectually. One thing we would suggest is that the assistance of middle-men should in this matter be dispensed with as far as possible; and that guano be bought in the docks from the ships that bring it. It is understood that the importers deliver quantities as small as thirty or forty tons. For this purpose gentlemen would have only to notify to their tenantry that as soon as such a quantity is subscribed for, they will purchase it of the importers, and cause it to be sent to the nearest market-town, where the subscribers can each receive their quota without any addition to the first cost beyond the expenses of transit; and the middle-man's trade is gone. None but fools or lunatics would in such a case think of obtaining guano otherwise than from the local centres here proposed; for, in the first place, it would be cheaper, and in the next place its purity would be beyond suspicion.

"If this suggestion were but carried out, the trade in adulteration would fall to pieces; or it would be carried on for the sole benefit of the foreigner, who, it must be owned, is already under considerable obligations to the 'Rognes in Guano.' And we will take leave to submit that such a policy would be of more real public advantage than idle hustings speeches, or dreary parliamentary harangues, or even than abusing Sir Robert Peel."

In giving place to the above, it is but an act of sheer justice to Mr. A. B. Davis, President of the Agricultural Society of Montgomery County, Maryland, to say, that he has, with benevolent forethought, and in the most disinterested manner, rendered great service to his brother farmers in that county, by engaging large quantities of guano, in a way to ensure against adulteration, to be let out in smaller parcels to those who wanted, without a tittle of advance on the wholesale price. While such actions speak their own comment, they yet deserve to be held up as examples. But it is not for such useful services to society that Congress gives away the *public lands!* To get high pay, and privileges, and pensions, and bounty lands, and palaces, and fine furniture, and life commissions, you must possess a trade that is *sprinkled with gunpowder and smells of blood.*

By the by, we have seen it stated somewhere that a treaty had been formed with the representatives of the Peruvian Government, under which we are to be put on the footing of the most favoured nation—England, for example—as to the *right of importing guano!*—which, like some of the favours we obtain in like manner from England, is no favour at all. The truth is, that the importation of guano *is monopolized* by a single mercantile house in England, to whom the right has been sold by the Peruvian Government; and English merchants and farmers generally, can no more import guano, except through

that house, than American farmers or merchants can. If this be the fact, as we apprehend it is, the treaty can serve no useful purpose, but that easy one of—*humbugging farmers*, as they were for some years humbugged about *foreign duties on our tobacco!*—If England is honest in her professions about free trade, will her Majesty's minister, or Mr. Brown, M. P., "of Richmond Hill, near Liverpool," please inform us why she continues to levy on our tobacco an impost of about $15,000,000 a year, as much as ought to pay the whole expenses of our government, if it has not become quite vulgar to talk any longer about *our expenses!*—seeing how easy it is *to borrow*—and how wise it is "in time of peace to prepare for war," by building up immense military establishments, which, after all, oftenest lead to war, and end, as war has always done, in millions on millions of public debt—taxes, pensions, and a career in which we are running, full tilt, with all sail set.—*Edit. P. L. & A.*

HORTICULTURAL MEMORANDA FOR AUGUST.

Since our last number appeared, the weather for the Gardener has been very unpropitious, *hot and dry.* The duties of the present month are sowing seeds and destroying weeds; preparing for an opportunity of rain, to plant out celery, in rich soil freely watered. Shade the plants, when practicable, from scorching sun till rooted. Look out a rich spot for fall spinage, cabbage, lettuce and corn salad, which sow thinly in drills one foot apart. Bud roses and fruit trees of every description—first plums, then pears, cherries, apples, apricots, peaches, and nectarines. The two latter will take well in September.

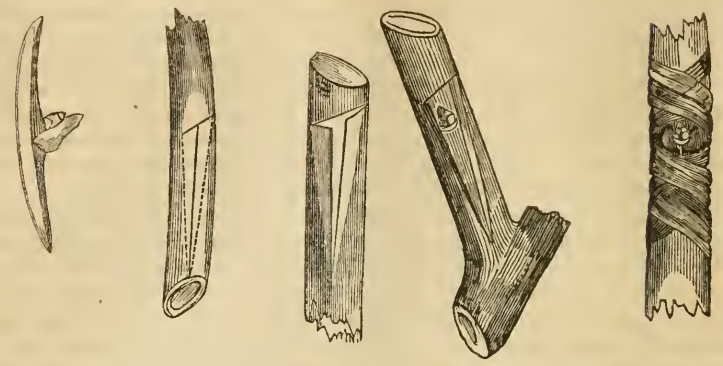
The Farmer has had glorious weather for hay-time and harvest. Wheat has suffered severely in some localities by rust and fly—whole fields not worth more than the straw, whilst others within a mile are very fine crops. Our own crop (Mediterranean) is fully an average; that after potatoes below average; that after corn, on which was sown from 2½ to 5 cwt. per acre of Guano (according to quality of the soil) is fine, straight, and heavy headed. Every person engaged in rural pursuits should be fully master of the art of budding to propagate and perpetuate any fine variety of fruit, which will at some period produce a sure and profitable crop. Although it is very generally known, yet many will take confidence, and profit by the following remarks and illustrations:—

The operation of budding may be performed with any sharp thin bladed knife, though one for the purpose, called a "budding knife," with a thin ivory handle, is preferable. It should be inserted about half an inch above the bud, and passing about one third of the way through the wood of the shoot, come out again about the same distance below it, the cut being as clean as possible. The portion of the bark in the centre of which the bud is situated, is called the shield, and when removed contains a portion of the wood; some prefer removing this carefully so as to leave merely the eye; others succeed equally well by retaining it. The argument seems to be in favour of allowing it to remain in this climate, in order to afford the bud a sufficient supply of sap, as the action of the sun would tend to dry it up before it could receive a supply from the stock. There is also greater danger to be apprehended from outward accidents when nothing but the eye is retained. The appearance of the bud at this stage of the operation with the wood removed, is shown in Fig. 1. If the wood is dry and does not separate readily, it is a sign the bud is too old, and should be rejected. When the wood is too old or too young the shield may be taken off by penetrating only one-fourth the way through the shoot, and inserted into the stock without removing the wood it contains; this method, particularly with very young shoots, is very successful.

If it should be neccessary to transport the buds to some distance, this may be safely done by cutting a portion of the shoot, and after stripping the foliage, wrap it up in damp moss, a few large leaves, or wet paper; it may then be kept for three or four days. In applying the bud to the stock an incision is to be made lengthwise through the bark (but not so as to injure the wood) about an inch in length, and this is to be diagonally crossed at the top by another incision, as shown in Fig. 2.

The thin ivory handle or back of the knife should then be used to raise the bark (as shown in Fig. 3). and the shield inserted within, gently pressing it to the bottom of the perpendicular incision. When it is properly placed, the portion of it above the diagonal cross should be cut off as in Fig. 4, and great care should be taken that it is in close contact with the wood of the stock. When this is done, bind it up with damp matting or cotton twist, all except the bud (see Fig. 5), which must be left free to the air, but

Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5.



protected from the powerful action of either sun or wet; either of which would defeat the whole operation. In eight or ten days the success of the operation will be known, and in two or three weeks the bandages must be loosened, though not entirely removed. From June to the middle of September budding may be done, choosing always cloudy weather, or a few days after a heavy rain; but for limited operations any evening may be chosen, always following the indication of the free parting of the bark from the wood, for if the bark does not rise with facility it indicates a scarcity of sap, and the buds are liable to perish for want of a due supply of nourishment. The buds should always be selected from young wood. [Subscribers to the last volume will remember that this subject was illustrated by the editor in the April number, page 617.]

Obsequies of President Taylor.—Let those who wish to read or preserve an appropriate well written account of the funeral, look for it in the National Intelligencer of the 15th of July.

Among other touching scenes and incidents it makes this mention of the General's old War Horse.

"But all eyes were drawn even from this solemn sight to one still more calculated to touch the feelings of a promiscuous assemblage; it was the General's favorite horse, the far-famed "*Old Whitey,*" so well known to every soldier who served under the brave old man through the perilous and glorious Mexican campaigns. He is a well-made animal, of some fifteen and a half hands in height, in fine condition, and as it seemed, with a military air. On the saddle were the holsters and inverted spurs. Poor fellow! he stepped proudly; but how would his pride have been quelled, could he have known that he now accompanied his beloved master for the last time! Yes, *Whitey!* you are surrounded by soldiers, as you were wont to be; the cannon thunder in your ear; that is a familiar sound; and near you is he whose heart never quailed and whose sword was never turned back from the fight; but, alas! he has met, at last, a foe he could not conquer, and the hand that so often patted your neck and reached you a morning token of his loving care, is cold in death, and will caress you no more!"

We owe to the kind thoughtfulness of our friend E. Whittlesey, the means of preserving a minute description of the form and points of "Old Whitey," written by J. Hildebrand, of Marietta, Ohio.

Far from losing anything, the old charger, through the force of mournful association, will have gained in the public esteem, by the death of him whom he bore on to victory, in so many battle fields, where, of both it may be said—"he mocked at fear and was not affrighted—neither turned he back from the sword." If I meet the enemy, in whatever numbers, "*I shall fight him!*" was the simple unostentatious expression of "Old Zack," when expecting to encounter a superior force.

The minute description of Old Whitey, alluded to above, was delayed in its publication, in the hope of accompanying it with a *true portrait* (such as ought to be preserved) of an animal, whose name will be connected and consecrated by history, with that of an illustrious warrior; as have been the names of Alexander and Bucephalus. A warrior, however, of far different stamp, since Taylor loved not war, for war's sake; and instead of weeping that he could find no more worlds to conquer, was even more beloved for his clemency, than he was admired for his indomitable courage. Glorious as was his victory at Monterey, even more glorious still, was that forbearance after it, which gave him a right to say, in the exulting language of Job—"The blessing of him that was ready to perish came upon me, and I caused the widow's heart to sing for joy."

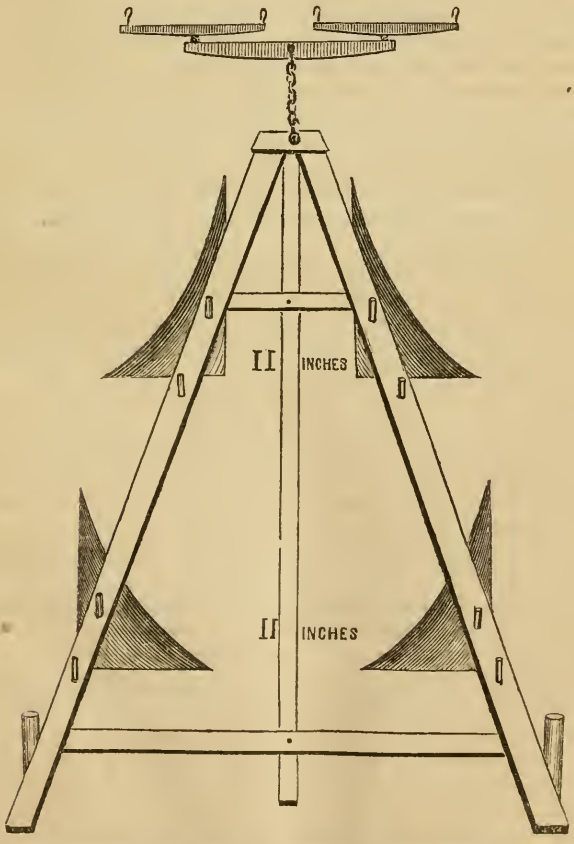
THE WORKY.

A NEW LABOUR-SAVING IMPLEMENT.

BALTIMORE, 21*st June*, 1850.

DEAR SIR—I herewith enclose to you a draft of the implement invented by me for working certain drill crops, and those planted in squares in the early stages of their growth, and I can say with great truth, that experience in its use warrants me in adding that I consider it one of the most important introductions, as a saver of labour to the farmer, that has been invented.

This implement, which may properly be named the "Worky," consists, as you will perceive by the enclosed draft, of a frame like that of the Cultivator, but *heavier*, has two forward cast bar shares, land side *inwards*, and two after cast bar shares, land side *outwards*—is drawn by two horses; it strides the drill or row, and by one operation throws the cut *from*, and back again *to*, the plant—being equal to *four* operations in the ordinary way. It does the work in the *best style* on well-prepared land, and can stride corn when knee high without injury. If desirable to pass over taller crops, it may be constructed with that view by giving more length to the leg of each bar share.



The two flat teeth are designed for use where the space between the rows may not be reached in going forward over the first and returning over the

second row. A second mortice should be made in the frame to set the bar-shares wider from the plant, where required.

Yours, very respectfully,

J. S. WILLIAMS.

P. S. Should any of your correspondents desire to have one of these implements, I will cheerfully attend to its being made here at one of our agricultural establishments.

It will cost, *complete,* ten dollars. J. S. W.

APPEAL TO AGRICULTURAL INVENTORS AND MACHINISTS.

Although within our personal observation, very decided improvements have been invented in Agricultural implements and machinery, there is yet a wide margin to be filled up by Yankee ingenuity. There are certain things that yet constitute great desiderata in the way of economising agricultural labour, that if needed in like degree for improvement in manufactures, or the art of navigation; and yet more especially, if required for economy and efficiency in the art of *destroying the human species,* would have been long since supplied.

See what the establishment of schools, and the application of the sciences of Chemistry and Mechanics, have done for Armies and Navies! those chronic sores, that had their origin in the ignorance and rapacity of barbarous times; coming down to us like hereditary diseases or the taint of original sin; inherent evils, that no improvement in medicine or morals can supersede.

If such a machine as that which is here called for by Mr. Croom, had been as long and as obviously needed to save the tedious labor of *chopping* with a hand hoe, over entire fields of hundreds of acres; if, we say, such an implement had been as long needed in other departments of industry, it would have been long since forthcoming. What would such an invention be in point of ingenuity, compared for instance, with the process of weaving an entire carpet, employing threads of every variety of colour, at a single operation?

By the by, we lately saw in an English paper, an account of the application of steam to *working the land;* not by *ploughing,* but by a revolving machine, to which was attached blades that worked like so many revolving *spades;* rather *digging* than *ploughing,* which, by the way, is much the more effectual process of the two. Now it strikes us, that such a machine, to go by horse, if not by steam power, might answer by the *omission,* at certain fixed distances, of the hoes or spades, where it was desired that the cotton plant should remain untouched. We should have given what was there said of this machine, were it only to belay, as the sailor says, what has been done in the way of applying steam to agriculture, hoping for further improvement, if needed, were it not that we are aware of the prejudice which exists against *foreign* inventions and devices, especially English, as not being "suited to our country," except the devices of English commercial policy to make herself "the workshop of the world:" the mill to which every nation must send, not exactly their corn to be ground—we have so far released ourselves from English thraldom, as to grind our own corn, and shoe our own horses;—but, what is worse only in degree—not in principle—she yet contrives to make us send our cotton and wool to be wove in her mills; and as for iron, instead of letting us send that to be wrought into bars and rails, she contrives with the "lullaby, lullaby, baby" song of "free trade," to persuade us not even to dig the rude ore from the mine; but to import millions of her beef and potatoes, in the form of iron, ready to be laid down through our coal and iron regions. Ah, what a wise, provident people we are! How much better and more submissive to mo-

ther England, thus to forego the use of our own materials, than undutifully to fly in the face of Mr. Bulwer's warning not to "offend British public opinion." She, all the while that she sings to her daughter the lullaby song of free trade, taxing a single one of our staples—tobacco—as much as we expend on all our army and navy, about $15,000,000, and quite as much as we *ought* to expend in the whole administration of the government.

We confess, however, with sorrow, that having no genius for invention, nor eye for machinery, we yet take pleasure in presenting the following offer.

We trust it will have the effect of setting our Machinists, Page, Maynard, Hussey, Ruggles, Nourse, Pennock, and others, to *thinking* at least. The premium offered, while it indicates the liberality and public spirit of the writer, bears no comparison to what would be to the inventor the value of such a machine; provided, he can promise himself immunity against *piratical depredations*, such as were committed against WHITNEY, the inventor of the Cotton gin, turning the blessing he contrived for his country into a curse for himself —the too common fate of inventors and benefactors of their country—and not the less to be apprehended now, that the crime of piracy is getting to be fashionable and popular, and men who in times past would have been hung wherever caught, as the common enemies of the human race—*hostes humani generis*—are softly styled "adventurers!" as much as to say, go where you are not called for, and if you succeed by the plunder and bloodshed of unoffending people, you shall be applauded to the echo as heroes; but if caught *flagrante delicto*, you shall have our sympathy; and if hung, as all pirates should be, we can say, let us avenge the blood of a free born American—let us unfurl the star spangled banner—in a word, let us again be plunged into all "the pomp and circumstance of glorious war;" and as for the expense! why the Farmer and Planter can pay that—they never examine into the bearing of the laws on their interests—the very suggestion of such a thing is unseemly, particularly in an agricultural paper, which should abstain from politics. Were not Farmers and Planters made, like their flocks, to follow their bell-wethers and —— be shorn when their shepherds please?

GREENSBORO', GREEN COUNTY, ALABAMA, *June* 3, 1850.

MR. EDITOR—My only apology for this communication is that your subscribers in Alabama are so few, that you are not likely to be troubled with many more such feeble articles. My object is simply to offer the amount of $200 to any one of your ingenious subscribers or others, who will furnish me with a machine to go by horse-power, for *chopping out cotton*, as such a machine is very much needed in the South, and as yet I have heard of no invention of the sort; therefore, I will give the above amount to any one who will invent such a machine, and secure to me the patent right for the State of Alabama; or twice the amount to any one who will invent it, and give to me the exclusive right, and I will have it patented, &c. As many of your subscribers are doubtless ignorant of the cotton plant altogether, I will make a few explanations in regard to the seed, planting of them, and cultivating of the same, so that I will be better understood. The seed is about the size of a common cow pea. The "beds" upon which they are planted, are thrown up with a turning plough, and are made from three to five feet in width. They are opened with an implement called a cotton opener, which is a rod of iron about an inch square, attached to a stock and drawn by a horse, and penetrates the bed about an inch and a quarter, which makes a small drill, and in this the cotton seed are planted or sown, at the rate of one bushel to two and a half per acre. After they come up well, that is after they attain the height of two or three inches, the hands begin with the weeding hoe, and chop it out, cutting out as much as twelve inches at each lick, and with this instrument an acre, or acre and a half, is as much as one hand can cut out per day. The cotton being crowded in the drill, the object in thinning it out is to let it grow off immediately: it is planted in that way to secure a good stand. Now my idea is, to get a machine to be pulled by a horse, so that one hand and a horse can take one row at a time and chop out ten acres per day; or it might, I should think, be so constructed, that the man and horse might walk between the rows in the "water furrow," and let the machine take two rows at a time, and cut out twenty acres per day; though either way would answer the purpose, so that it cut the cotton clean every twelve

or eighteen inches, leaving three or four stalks between each cut. If a pair of scrapers could be constructed, to scrape the grass from the cotton on each side of the drill, it would still be better. JOHN L. CROOM.

STATISTICS INTERESTING TO EVERY FARMER.

BALTIMORE, 15*th June*, 1850.

JNO. S. SKINNER, Esq.

Sir—Please accept a Chapter on Statistics. I have just been favoured with a copy of the Report of the Secretary of the Treasury on the Commerce and Navigation of the United States.

This document was communicated to Congress earlier than usual, as the termination of the fiscal year now gives the secretary five months to prepare it before the meeting of Congress; but why should six months be required to print it?

It relates to the great foreign trade of the country for the fiscal year ending 30th June, 1849.

The information is of great interest, and would have saved the country much if promptly published; but coming to light from one to two years after the occurrence of the facts to which it relates, it comes like an old almanac—a dull history of the past—but too late to profit withal.

The statesman needs this information to instruct him in legislation, and the merchant requires it to guide him in the questions of how he shall employ his ships, and what he shall export and what he shall import, and save him from the loss resulting from ordering merchandize to a market already overstocked. Not only are merchants in the dark for want of statistical information, but the absence of such information enables designing speculators to impose on the public. The article of *coffee* affords an illustration. No doubt the crop of coffee was short, but the deficiency was shamefully exaggerated, and speculators succeeded in nearly doubling the natural price. But they overacted their part, and advanced the price so high that the consumption fell off, and the price declined more rapidly than it rose—and fortunes were made and fortunes were lost. Coffee deserves to be noticed by a separate article, and is now only brought forward for the purpose of saying, that under a proper system of statistics the general public would not have been imposed on to such an extent.

You know what the proper system is, and you would render good service by making the emergency apparent at Washington. We borrow much from England—let us adopt her plan of statistics. Let there be a bureau devoted to this object—and, as in England, let the results be *published monthly*, independent of Congress and independent of Congressional printing—then the *farmer*, the *merchant*, and the statesman can see what is passing—may see how their respective interests are affected, and govern themselves accordingly.

My views may be illustrated further by an important item in this report. During the year ending the 30th June, 1849, there was imported into the United States in various forms no less than 324,687 tons of iron, which is almost *one thousand tons each day;* and besides all this, cutlery and hardware or manufactures of iron not specified to the value of 4,542,991 dollars (the weight of the iron not being reported).

Need we wonder that the iron establishments of the country are falling one after another into ruin? Need we wonder that of the thirty-three blast furnaces in little Maryland, which were formerly in full operation, diffusing nothing but good to the farmer and labourer, are now all as silent as the sepulchre—all except some four or five, which linger out a miserable existence.

These excessive imports, now so lately made known officially, will also account for the fact that of six hundred furnaces in the State of Pennsylvania, *two hundred and seventy-five are now in the hands of the Sheriff*, and of three

hundred and twenty iron forges, one hundred and six are likewise in the Sheriff's hands. But how does this apply to the question of statistics? It applies thus. If these astounding facts had been known to the Iron masters, they might have saved at least one year of toil and anxiety, and have made a better dividend for their creditors. If such be the imports of the year ending the 30th June, 1849, what has been the importation of the year which followed, that is the year just ended?

The secret will be revealed officially next June, a year hence. But we want the information now—and now it would be more useful than at any other time. In the absence of official reports we must estimate; and taking a wide latitude, I venture to predict that the importation of Iron in its various forms will amount to between 400,000 and 500,000 tons, and that the Cutlery and Hardware will amount in value to five millions of dollars in addition.

This estimate is predicated upon the knowledge of the general stoppage of the rolling mills, which were engaged on railroad iron in this country, and the notorious heavy imports of railroad iron, and also the continued decline of prices in England. The Baltimore and Ohio Railroad Company are now receiving iron at £5 10*s.* the ton; but the same article, when the steamer Asia left, could not be delivered free on board at 20*s.* less, viz. £4 10*s.* And pray what is £4 10*s.*? Why it is exactly twenty dollars! Hence I repeat, that the importations of iron are probably at this moment at the rate of 500,000 tons per annum, exclusive of hardware and cutlery. Being not less than the prodigious quantity of 1300 *tons a day*. Enterprise nowhere abounds more than among Iron masters—but no enterprise can resist such an importation. If the foreigner would insist on having *cost* for his iron, there might be some hope; his railroad bars cost him more than twenty dollars a ton, yet he will sell them at that price, perhaps calculating, as well he may calculate, that he thereby places the extinguisher on the six hundred blast furnaces of your State of Pennsylvania, and when their fires have gone out, the Iron works of the other States may be considered as doomed.

I know it is an Agricultural Journal you publish, but you have a corner for the Loom and the Anvil, and the farmer has a direct interest in the Iron question. Ask the Pennsylvania farmer what becomes of the operatives who are discharged from employment, when the six hundred blast furnaces, the three hundred and twenty-five forges, and the numerous rolling mills and foundries are silenced? They have no alternative than to become tillers of the soil—they are compelled to abandon the chopping of wood, digging of ore, and mining of coal, and they become the rivals of the farmer, instead of continuing his customer and the consumer of his products. He raises his own provisions and buys comparatively nothing. And this applies to the whole business of life. If it be the will of the people that the manufacturing interest must be abandoned and our workshops be transferred to Europe, then all must turn farmers. True it is, there may be a want of consumers and a want of a market, yet the labourer may live, and to live—to vegetate—is all that the artisan of our country can now hope for: his talent is handicraft—his acquisition of a trade or art, the result of a long apprenticeship in youth, and much experience in maturer years, is lost to him and to the country, and to live, he is compelled to resort to pursuits for which he is not qualified by experience and habit, and in a department already overdone, as the statistics of the season just passing would show, if such statistics could be had. But this would lead to another branch of our subject, and though the Treasury Report, which has inflicted this article on you, comes late, yet there is much to be learned from it, and if the present communication be acceptable to you and your patrons, I will ask the favour of being further heard.

NOTE BY THE EDITOR.—Not only is it acceptable, but, as many of our patrons in the South and West have said, on seeing this Journal, "It's the very thing we wanted"—something that would show to the planter and farmer that they have something to learn besides the time to sow and the depth to plant, the time to cut and gather, and how to cure and feed. The first thing that agriculture needs, is *steady and remunerating demand;* and the way to ensure it, those who are employed in manufacturing what we want, must be here upon the spot, where we have the materials for such manufacture in abundance, and where they will be certain to demand, and able to pay for what the cultivator of the *soil has to sell!* secure for the product of fields, and orchards, and gardens, and forests, and mines, that *certain demand*, and then you will have laid a broad and solid foundation for all sorts of improvement, and not until then, resort to what *expedients* you may. You might as well expect to revive a drooping field of 1000 acres of corn, expiring under a withering, intense drought, by watering a few hills here and there—one out of ten thousand—as to retrieve the declining agriculture of a country by offering a few $5 premiums for the best pigs or potatoes. You must have *thick population and diversified employment at home*, and that is not to be had by letting in Canada wheat and English iron and cloth. We verily believe, that were it not that party prejudice, and the love of power and office, overrides all other considerations, there would not be found one legislator in the Union who would hesitate to give adequate protection to American labour. Yes, we say again to our correspondent, your communications are acceptable; but we wish you always to show the connection of the questions discussed *with the interests of agriculture*, for *that*, after all, is the great interest we have in view. —*Ed. P. L. and A.*

ROSWELL HOUSE—PATERSON, NEW JERSEY.

WE have again had the pleasure of a sojourn of some days, at Roswell House, New Jersey, and took the opportunity to look more particularly into its beauties and its products; its extensive plantations of ornamental and fruit trees; its shrubbery and flowers of infinite variety; its fine milch cattle—its rich dairy and beautiful land and water poultry. Of all these we may beguile a leisure moment for ourselves and readers, if we can ever find one, by writing out our "notes."

What would the reader think, for instance, of forty kinds of grapes under glass, and six American in open air; some of the former in a state of delicious maturity, for present table enjoyment; apples, pears, cherries, in vast variety; quinces, plums, peaches, apricots, nectarines; near 1000 ever-green trees, with several hundred deciduous ornamental, and over 1200 fruit trees? Five acres are covered by spring water, from four to ten feet deep, as play-*grounds* for the majestic swan and watchful babbling goose! But we have no time for particulars. Happy would it be for society, were the taste of all men who have the means to run thus into fondness for things that tend to agricultural and horticultural improvement! to the embellishment of a country, and the refinement of its people.

We left just in time to *not* witness the arrival of the *Hungarian cattle;* a young bull and heifer, of a pale mouse colour, which cost in Hungary, - - $112 50

Expenses to Bremen,	231 05
Food *for the voyage*,	30 00
Freight,	50 00
Total cost at New York,	$423 55

These are cattle of the breed described by Mr. Fleichman, in the Patent Office Report as quoted in our last number.

Mr. Colt has desired his friend, General Devereux, to procure, through the kind assistance of Col. Le Coteur, another Jersey or "Alderney" cow.

At our instance, his worthy and intelligent manager, Mr. Fische, had two lots of hay, cut while we were there, measured:—

Result.—Pure timothy, 2¼ acres yielded 6¾ tons.

Timothy and clover mixed, 6¼ acres yielded 21¼ tons.

This, it must be admitted, is "hard to beat," but was beaten, nevertheless, by a lot of seven acres and one hundred rods, connected with the beautiful residence of H. W. Clapp, Esq., at Greenfield, Massachusetts, which last week yielded twenty-nine tons, four hundred and ninety-seven pounds, or over four tons to the acre, of hay, "cut and housed in beautiful order." How many candidates will there be for the premiums of agricultural societies, for crops less than these?

How striking the contrast, between taste like this and that loathsome and eternal anxiety betrayed by some millionaires, to heap dollar upon dollar, for no earthly object but to gratify the loathsome pride of being accounted rich, while they leave even near relatives to pine in hopeless poverty, under providential afflictions!

The Plough, the Loom, and the Anvil.

Vol. III. SEPTEMBER, 1850. No. III.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

Though the heading of this next chapter from Mr. Carey, in reply to a circular from the Secretary of the Treasury, may be all-sufficient, in the existing temper of the public mind, to rivet attention to its contents, yet is there not danger that the very excitement which begets curiosity to see what is there said, in a journal at once agricultural and national on the all-absorbing topic of slavery, may itself prove unfavourable to that deliberate and impartial consideration which is indispensable to the perception of truth? Early impressions, with their concomitant prejudices, are, under all circumstances, great barriers to successful investigation; and the more especially in cases like this, where preconceived views of self-interest combine with more or less of excitement and passion, to confuse and mislead, rather than to enlighten the mind of the inquirer.

He who advances, for the first time, as the basis of his theory, the idea that in proportion as the labour of the slave becomes more and more profitable, will the chain which binds him to his owner become weakened, even to the final dissolution, by common consent, of the institution itself; seems at once to maintain a paradox so at war with the general impression, and common course of things, as to need more patience and candour than is usually awarded to those who strike thus boldly at our old and long-settled opinions; and hence it is, that without attempting here to enter into the merits of the question, we feel called upon to invoke for the writer a fair and candid hearing. Our own maxim, as is well known, leading us to hear all sides, we will venture only to remind the reader that the most important discoveries in science, such even as the revolution of the planets themselves, and the circulation of the blood, have been at first denounced and punished as sacrilegious, or ridiculed as empirical innovations on the established belief of the world.—*Edit. P. L. & A.*

CHAPTER SIXTEENTH.

HOW PROTECTION AFFECTS THE SLAVE AND HIS MASTER.

Protection tends to increase the productiveness of labour. Many of the labourers of the Union are held as slaves, and protection must tend to render their labour more valuable to their owners, who may, therefore, be rendered less disposed to part with them. If such were likely to be the fact, protection would tend to perpetuate slavery, and all who were opposed to its continuance should advocate free trade.

By all English writers, and by many among ourselves, it is held that the way to terminate the existence of slavery is to destroy the value of slave-labour. With that view the British government is urged to prohibit slave-grown sugar, and to encourage the extension of the cotton culture in India—the wretched Hindoo, who labours a whole month for two rupees, (one dollar,) out of which he feeds and clothes himself, being held to be a freer man than the well-fed, well-clothed, and well-lodged labourer of Virginia or Kentucky.

Throughout the world, men have become free as wealth and population

have grown, and as land has increased in value. In the early days of Rome, when Latium was filled with prosperous cities, land was valuable, and men were free. With the gradual depopulation of Italy, land lost its value, and large masses accumulated in the hands of great proprietors surrounded by slaves. So was it in Attica. In the days of Solon, land was valuable and men were free. In those of Herodes Atticus, land was valueless and men were slaves. The richest lands of India have been abandoned and are now jungle, and the descendants of the little village proprietors of the last century now sell themselves to slavery in Jamaica and Demerara. In Russia, land has no value. The value of a property is estimated by the number of its serfs. In Belgium, land has great value, and the people are the freest in Europe. With the gradual increase in the value of land in England, men became more free, whereas with every step tending to increase dependence on Poland and Russia for food, land is becoming less valuable, labourers are becoming more and more the inhabitants of parish work-houses and the slaves of parish beadles, and landowners are becoming more and more anxious to expel the population that would otherwise give value to the land. The land of Ireland has almost lost its value, and the labourer of Ireland has become a slave to the caprices of masters who regard him as an encumbrance to be gotten rid of by any process, however cruel.

Increase in the value of land tends towards freedom; decrease tends towards slavery. If protection tends to add value to land, it tends to the promotion of freedom; if it tends to diminish its value, it tends to the maintenance of slavery.

The least valuable land is that in which men are most rare; the most valuable is that in which they most abound. The cause of the difference between the two is to be found in the difference in the labour required for the performance of exchanges. The hills of Limburg, the poorest part of Belgium, rent for from six to eight dollars; and for flax land in Flanders, ten to twelve dollars per acre is a common rent; while cotton-producing land of the highest quality may here be had, *in fee*, for *one-eighth* of the latter sum. The one has a market on the land, and the other has not; and in this single and simple fact may be found nearly the whole reason for this enormous disproportion.

The man who lives in Arkansas has to employ numerous men, horses, steamboats, ships, and warehouses, in the performance of every exchange, and the consequence is, that he receives for the produce of his land little more than compensation for his labour, and his land has scarcely any value. He can raise for market little else than cotton, of which the earth yields but little, for which reason it commands a price that will enable it to bear transportation. His surplus corn is almost valueless; while to attempt to raise for market potatoes or turnips, of which the earth yields by hundreds of bushels to the acre, would be ruinous.

The man who lives near New York exchanges directly with the consumer of his products and the producers of the commodities that he desires to consume. He can raise potatoes, turnips, and cabbages, bulky articles; or strawberries and raspberries, delicate ones—none of which will bear transportation. He sells his milk, and is not compelled to convert it into butter or cheese. He is not required to convert his corn into pork, with a view to diminishing its bulk and enabling it to go to market. His products are all consumed near him, and he can readily return to the land the refuse, increasing its productive power from year to year. The amount yielded is far more than wages for his labour, and the whole surplus is the rent he derives from his land, fifteen or twenty years purchase of which is its market value.

That value is three, four, five, or six hundred dollars per acre, while land in Arkansas is now offered in free gift to those who will come and pay the taxes. The sole cause of the difference is, that the owner of the one exchanges directly with the men who make hats and coats, shoes and stockings, ploughs and harrows, and the other does not. To make the land of Arkansas as valuable as that near New York, it would be necessary that its owner should exchange for hats and shoes, ploughs and harrows, as freely as does the man of New York; that is, he must make a market on the land for the products of the land. The return to labour would then be large, and the value of man would rise; but all that was returned over and above the wages of the labourer would be rent, and the value of land would rise. Men would then become free; first, because the cost of raising a slave would be far more than he was worth when raised; and, second, because the land would be too valuable to be cultivated by slaves.

The man of Wisconsin can afford to raise hogs, because corn is but twenty cents a bushel. The man near New York cannot, because corn is worth sixty cents. The man of Arkansas can afford to raise slaves, because they are worth as much as they cost to raise. The man near New York could not, because they would cost him more than their services would repay. Had Arkansas a market on the land for all the products of the land, hired labour would be found so much cheaper that no man would desire to raise a slave.

The man who owns valuable machinery cannot afford to employ poor labour. The interest on his factory is as great if the looms produce but twenty-five yards per day as if they produced fifty. With the former quantity he would be ruined. With the latter he would grow rich. The slave will give him the one—the freeman the other. To make the slave work like the freeman, he must have an inducement—that is, he must receive wages.

Were a large landholder near New York offered the services of men, their wives and families, on the same terms as the planter has those of his slaves—to feed, clothe and lodge them—he could not profitably accept them; and yet the money-price of such labour is at least *twice* as great as at the South. The price of their food, however, would be *thrice* as great, and they would require more clothing, and their children must be educated; and to obtain all these things there would be needed the exertion of the man working for himself, and the economy of one who looked to the future for himself and his family. Were such an offer accepted, the party accepting would speedily find that his people produced less and wasted more than those of his neighbours, and that the rent of his land was diminished by the arrangement.

Place in the Southern States machinery for converting into cloth half a million of bales of cotton, and for producing half a million of tons of bar-iron, and there would be created a great demand for labour. The facility of obtaining iron in exchange for corn and cotton would cause the making of thousands of miles of railroad, and here would be a new demand for labour. The mills, the furnaces, and the roads would bring towns, filled with tailors, shoemakers, hatters, blacksmiths, makers of ploughs and harrows, looms, spindles, and steam-engines, and here would be a new and large demand for labour, while the number of labourers would not be increased. It would then become necessary to economize labour because of its increased value. How could it be done? The slave would do no more than his accustomed work, without an inducement, and that is to be found in wages. The increased product of his labour would thenceforth go to himself.

Large crops would then be obtained in lieu of small ones, and one hundred bushels of corn, or one hundred pounds of cotton would then buy more cloth or iron than now are obtained for three. The increased value of crops would raise the price of land, and if that should average but ten

dollars per acre over the South, it would amount to four thousand millions of dollars, and thus would the planters be made rich.

Here, then, are two commodities, man and land, both increasing in value, but the increase in the one goes to the man himself, while that of the other goes to the owner. What would be the effect of this on their market value? Where property is steadily growing in value, it sells for twenty, thirty, and even more years' purchase of its rent. Such would be the case with land.

When property is decreasing in value, it sells for six, eight, or ten years' purchase of the rent that can be commanded for its use. Such would be the case with the slave. With the increased productiveness of his labour he would be obtaining for himself an increased *proportion*, leaving a diminished one to his owner, and thus would the value of the slave be transferred to the land.

To raise a slave would then become too costly. What then would become of the children? The *parents*, everywhere, make sacrifices for their offspring, and by them alone can children be raised, where land is valuable. To induce those sacrifices they must know that they are working for *their own* children, and not for *their master's* slaves.

With increase in the value comes the division of land. Great plantations would become small ones, each of which would yield more than is now yielded by the whole. Small farms would come, cultivated by negro tenants, and thus step by step would men, their wives and children, become free, as their late owners were becoming rich.

To accomplish both these objects it is necessary that the people of the South should have mills and furnaces to make a market on the land for the products of the land. Those they cannot have without protection against the monopoly system by which they are now being exhausted. The abolitionist and the slaveholder should then unite in the demand for the adoption of measures tending to the abolition of the English monopoly of machinery.

The former would, however, say that the process would be too slow. On the contrary, it would be most rapid. Had the tariff of 1828 continued in existence to the present time, the lands of the South would now be trebled in value, and the slaves of the South would now be far advanced towards freedom.

The latter would say that they would lose their property. The answer would be that for every dollar of diminished value in man, they would have five, or ten, or twenty in the increased value of land. It would be precisely as land became valuable that man would become free.

The Union is now agitated by the question whether or not slavery shall be carried beyond its present limits. The agitators are determined to force the Wilmot proviso upon the South, and the people of the latter declare that they will dissolve the Union rather than submit to it. Neither is disposed to penetrate below the surface to understand the cause of difficulty.

If a demand for labour existed in the Slave States, consequent upon making a market on the land for its products, the necessity for *emigration* would pass away, and *immigration* would begin. The people of the South would not then desire to go to California, nor would those of the North deem it necessary to pass laws to prevent them from so doing. All the discord between the different portions of the Union results from the existence of the colonial system, which it is the object of protection to terminate, and thereby raise the value of land and of man, black or white, throughout the world.

This question has thus far been looked at as one of dollars and cents merely, and such is the light in which it should be examined. When it can be shown to be the *interest* of a body of men to pursue a certain course, we may safely calculate upon its being pursued by a large portion of them; but

when we confine ourselves to showing that it is their *duty*, and that in the performance of that duty they must neglect their interests, we may as safely calculate that very few will follow in the course thus indicated. The agitators of the North would impair the value of property and destroy the peace of the South, while deteriorating the condition of the objects of their sympathy, and all this they would do that *others* might be compelled to perform their duties. It is time that the reasonable men, North and South, should understand each other, and determine to adopt the course that would give value to labour and land, and thus relieve themselves from the dangers incident to the agitation of men who would destroy the value of both.

With every step of improvement in the value of land, there would come improvement in the physical and moral condition of its owner. Throughout the South, there is even now a growing indisposition to hold men in slavery; but how rapidly and widely would that feeling extend itself were the owners of land and of slaves to feel themselves growing richer instead of poorer, as is now the case. The cause of emancipation has been going backwards for the last twenty years, and those who desire to know why it is so have only to look to the fact, that, in 1845–6, 600,000,000 of pounds of cotton would not bring as much iron to the plantation as 100,000,000 would have done thirty years before, or 275,000,000 only a dozen years before.* The consequence has been a growing tendency to the abandonment of land, and an increased regard for that species of property which was capable of being transferred, which land was not. Harassed and annoyed by abolitionists on the one hand, and on the other by a constant deterioration in the value of the only crop upon which he has been accustomed to depend, and compelled to change from that to sugar or to wheat, it is no matter of surprise that there should have been produced the state of feverish excitement now witnessed everywhere in the planting States, and which must increase unless the loom can be brought to take its place by the side of the cotton.

It is a common impression, that the people of South Carolina have exhausted their rich lands, and that they are moving away from poor ones, yet nothing can be more erroneous. They commenced upon poor soils, as has been done in every country of the world, and they are now flying from meadow-lands capable of yielding the finest artificial grasses, of which they have millions of acres untouched; from river bottoms uncleared, from swamps undrained, and from marl, and lime, and iron ore, all of which exist in almost unlimited quantity. Nature has done for that State every thing that could be done; but man has, as yet, done nothing but exhaust the poor soils upon which the work of cultivation was first commenced, and therefore it is that their agricultural reports, and their newspapers repeat, year after year, the question, "What shall the cotton planters do?"

"This," says the editor of the South Carolinian, "is a question daily asked by our planting friends. There seems," he continues, "at present great solicitude as to the policy which is to be pursued by them in pitching their next crop. We hear the cry of less cotton and more grain ringing from one end of the State to the other. We are not surprised that many planters who plant heavily should say their present crop will bring them in debt if the ruinous prices continue much longer. No planter can make both ends meet who receives only four or five cents for his cotton, and has to pay the present exorbitant prices for bagging, bale rope, pork, mules, sugar, coffee, salt, and iron. Mules are high, pork is high, bagging and rope are up to the prices of the twelve and fifteen cent times of cotton, and sugar, coffee, iron, and salt steadily stand at the old rates. If to expenditures for these necessary articles, the planter has to add his negro clothes, shoes, hats, and blankets, he will have nothing left to remunerate him for his labour.

* See page 16, *ante*.

These are really matters which they should ponder over, and a system of planting, which does not repay for the labour and investment of capital engaged in it, we reasonably think would soon be abandoned. But it will not be. Our planters are taught no other systems; they do not know how they will supply the vacuum which would be made by an immediate abandonment of the cotton crop. It would take several years before they could perfect, with the strictest economy, those arrangements which would render them entirely independent of it as a marketable crop. Therefore the step taken should be wisely considered before adopted, and the utmost caution should be observed in making, what we sincerely believe would be, if once begun, a radical change in our system of agriculture. We therefore advise, for the coming year, a reduction simply of one-third of the cotton crop throughout the State—devoting, at the same time, the land thus thrown out of the cultivation of this crop to the production of grain and the increase of labour, which would thus be given, to the proper manuring and improved tillage of the cotton planted and the general improvement of the plantation. By this process the cotton lands would be increased in fertility, and the increase of grain which would follow would greatly facilitate the rearing of mules, hogs, cattle, and sheep; and in a short time the whole State could render itself independent of the exactions of our Kentucky neighbours, who kindly supply us with all such things, simply at the expense of the prosperity of our agricultural population; for, in practice, they annually sweep the country of all the surplus cash which is afloat in payment for their bacon and mules. We would, if this system were adopted, soon be able to produce as much cotton on fifty acres as we do now on one hundred; and the investment of the agricultural profits of the State at home, although they might be small, would have a wonderful influence on general prosperity, and build facilities throughout our now desolate and almost unapproachable State, which would not only enchain our own sons to her borders, but induce capitalists to come into our midst, to make their dollars tell by learning us a lesson of practical enterprise. We say to the planters, raise less cotton, more grain, more mules, more hogs; make your own negro clothes; raise sheep—make your own blankets; erect tan-yards—encourage shoemakers and hatters; in fact, artisans of all kinds to settle permanently amongst you; labour at making your soil rich, and do not devote all your energies to wearing it out, and soon all things will go well with you. You will not make so many bales of cotton; in fact, may not cut such a swell on your factors' books; but, take our word for it, you will have happier slaves, richer lands, more thrift and fewer debts, and sleepless thoughts, to harass your hours of rest."

It is impossible to read this without being struck with the fact, that, while, from the exhaustion of her original poor soils, and her inability to clear and drain rich ones, that State is unable to produce cotton in competition with her neighbours, she is a large importer of other agricultural produce. Her chief city is supplied with hay from the North, notwithstanding her abundance of rich meadow land. She consumes the pork of Ohio, and she uses the mules of Kentucky; and thus, while selling her products at the low price that is necessarily consequent upon her distance from the place at which her food and cotton are to be converted into cloth, she buys of others food, mules, &c., at the highest price, because of her distance from the place of production. She wastes labour and manure upon the road, and is then surprised at the exhaustion that results necessarily from such a course of policy.

The remedy for all this may, it is supposed, be found, first, in diminishing the quantity of cotton; but that is already diminishing so rapidly that the great cause of apprehension throughout the State seems to be that its cultivation must soon cease, because of inability to produce it. She desires to diminish the supply of cotton, while her people are flying from her to seek the west, there *to produce more cotton*. Second, the lands are to be manured, but we are not told from whence the manure is to come. The State has scarcely any consumers of agricultural produce except those who are engaged in its production, and their consumption yields but little manure. Her horses are always on the road, wasting the manure yielded by her hay and her corn, and her rice and cotton are consumed abroad, the consequence of

which is, that of what is yielded by the land nothing goes back, and the land and its owner become impoverished together. Her population diminishes. Everybody is seeking to find elsewhere a better place for employing his capital and his labour. Under such circumstances it is useless to talk about artificial manures, and her swamps and river bottoms, in which manure has for ages accumulated, will not pay the cost of clearing for the raising of three or four hundred pounds of cotton to the acre. Give her a consuming population that will make a market on the ground for the tons of potatoes, and turnips, and hay, and the milk, and the veal, that will be yielded by rich soils, and the State will become one of the richest of the Union. It is population that makes food come from the rich soils, as we see to be the case in Belgium, and England, and New England; and it is depopulation that drives men back to the poorer ones, as is shown in Ireland, India, South Carolina, and Virginia. The people of Ireland are flying from each other as if from pestilence, and yet that unfortunate island, in which men are restricted almost entirely to the cultivation of the land, offers us now the chief European market for our surplus food, while South Carolina, destitute of consumers, is one of the principal markets of populous Ohio for her surplus products. Whenever the former shall begin to consume on the land the products of the land, she will have manure to keep in cultivation her poor soils, and she will acquire ability to clear and drain the rich ones, and then she may export hay instead of importing it. Ireland, like South Carolina, abounds in rich soils untouched. She has millions of acres of bog that could be drained with far less labour, and at far less cost, than have been required for similar lands in England, and it is estimated that three millions of these acres would afford food for six millions of people; but, also, like South Carolina, she is compelled to waste on the road the labour and manure yielded by the poorer soils now in cultivation, and is thereby rendered too poor to clear and drain the rich ones, which never have paid, and never can pay, the cost of preparation, without the presence of a consuming population requiring the potatoes, and the turnips, and the hay, of which the earth yields by tons, and not by pounds or bushels.

Had the people of the Southern States, during the last twenty years, been making for themselves, out of their own coal, ore, and limestone, an average of only 250,000 tons of iron, the quantity made in that time would have been five millions of tons, all of which would now be there in the various forms of agricultural and manufacturing machinery, railroads, cars, and locomotives, and they would now be adding to the quantity at the rate of half a million of tons annually.

Fifty thousand tons of iron would make almost 500 miles of single track road. Let us suppose that they averaged annually but half that quantity, and had now, as they might easily have, 5000 miles of road running through populous manufacturing villages in which they were converting their cotton into cloth or yarn for the supply of the world, and then let us estimate what would be the increased value of the landed property of those States. An average annual product exceeding that of the present time to the extent of only *one dollar per acre* of the States south of Mason and Dixon's line, would represent a capital of *six thousand millions of dollars*, being perhaps five times the present value of their slave population, all of which would be at this moment on the highway towards freedom as their masters were making their way towards fortune.*

Instead of pursuing a course that would have enabled them to profit by the

* Emigration from the rich lands of the older States of the South would then cease, and immigration would begin, and thenceforth the increase in the value of land would be immense.

magnificence of their position, the planters have allowed themselves to be taxed for the maintenance of the people of England, who produce little themselves, and have therefore but very little to give in exchange for the vast mass of agricultural products they receive, the consequence of which is, that their customers are becoming poorer every day, and they themselves are fast passing towards a state of exhaustion similar to that they have produced in Ireland, India, the West Indies, and every other country that has been compelled to submit to their most unnatural system. A writer, describing the present position of affairs, says:—

"As a disinterested spectator of events, I assure you that during a residence of nearly ten years in England, I have not seen the different branches of trade in so disastrous a position as they are at present; and from the petty dealer to the wholesale tradesman, I have never heard so many complaints about the wretched state of trade, not only in the metropolis, but generally throughout the country. I place more confidence in the statements of a dozen respectable tradesmen than I do in 'trade circulars,' which are usually got up to serve certain interests, or to cover the real truth, and incite speculation. If I were to give an impartial opinion, I should unhesitatingly say that the repeal of the corn-laws, the repeal of the navigation laws and the railway mania, have together produced the present panic—for it is useless to say that there is not a panic; the leading men of nearly every class declare it by their looks, their words, and their actions.

"The parish of St. Clement's Danes, one of the richest parishes of the metropolis, where I am now residing, shows the real condition of the general trades-people of London. The Church-warden of this parish recently informed me that *three* applications had been made to the parishioners for the amount of their poor rates and other taxes, and not more than one in twenty had paid their bills, and he intended to issue summonses against the delinquents. He also remarked, that during a residence of eighteen years in this parish, he had never known trade to be so dull as it is now."

What prospect there is of improvement may be gathered from the following extract from a journal that is the highest free-trade authority in England:—

"We may not unreasonably fear, therefore, that, so far as Ireland is concerned, a considerable source of the progressive increase of the population and wealth of the empire is much diminished, if not absolutely dried up. Other sources of increase have, at the same time, been opened to us; but whether these will balance, or more than balance, the loss occasioned by the condition of Ireland is more than we can say. For many years the condition of the population there was gradually deteriorating, while their numbers increased; that terrible process has at length reached its climax, and the present generation has to sustain the deteriorated, and we fear demoralized mass, without any immediate hope of their being restored to habits of productive industry. It seems right to put all classes at once on their guard, lest the decrease of population noticed in the last quarter, may, from the causes we have mentioned, be an index to a permanently slower increase in population than has hitherto taken place."—*Economist* (*London.*)

With such a state of things the consumption of our products cannot increase. The question to be answered is, "Can it even be maintained?" Whenever population diminishes in its ratio of growth, it is an evidence of a deterioration of condition, and when that is going on, the first effect is felt in the diminished demand for clothing, for food is the want that must be first supplied.

Let it but be known that the people of this country, North, South, East, and West, are *determined* that the seat of the cotton and iron manufactures of the world is to be here, and the transfer of men and machinery will be such as to exceed all present calculation, and every man that comes will consume three, four, five, six, or twelve times as much cotton as at present, while taking all his food from our own farmers, who then will consume three pounds where now they consume but one. The remedy for all the grievances of the planters is in their own hands, and it lies in the pursuance of a policy advocated by the fathers of the Revolution, and by every chief magistrate of

the Union, from Washington to Jackson, and of all of them but two were from south of Mason and Dixon's line, and all but those two elected by the same party that now repudiates protection.

Of all the chapters in the history of the people of this Union, the most honourable to them, as I believe, is that in which is recorded the history of the negro race. The three hundred thousand barbarians imported into this country are now represented by almost four millions of people, far advanced towards civilization and freedom, and to that number they have grown because they have been well fed, well clothed, well sheltered, and reasonably worked. It is a case totally without a parallel in the world, the history of which may be challenged for the production of a body of men invested with so much power over their fellow-men as has been exercised by the people of the South, and using it so moderately as to permit so rapid an advance in numbers and so great an improvement of condition.

Nevertheless, they are unceasingly stigmatized as slave-drivers and negro-breeders, and by the nation which lives out of them, and which *of all the nations of Europe possessing colonies has most misused its power over the negro race*, because the only one which has established laws prohibiting the consumer and the producer from taking their places by each other. It was remarked many years since, by an intelligent English traveller,* that to the French islands men went to remain and to exercise trades, but to the English ones they went only to endeavour to make fortunes, and then return. So has it everywhere been, and what have been the results? In India, poverty the most extraordinary, and a succession of famines and pestilences without a parallel; in the West Indies, a waste of life equally unparalleled, requiring constant importations for the mere maintenance of their numbers. From 1817 to 1829, a period of twelve years, the slaves of Jamaica were reduced in numbers, *by death alone*, ten per cent.; whereas had they been here they would have increased thirty per cent. The number imported into that one island could not have been less than double that imported into this Union, and yet, while the larger number is at this day represented by *three hundred thousand*, the smaller is represented by *almost four millions*. The slave chapter of British history is as disgraceful as that of the Union is honourable.

That slavery even yet exists among us, is due to the monopoly system which has destroyed the value of land in Ireland, India, the West Indies, and all other of the British colonies, and yet the nation by which that system was instituted heads the crusade against slavery, while converting the freemen of Ireland and India into slaves, and denouncing the planters, at whose expense she lives, as unworthy to be received into the society of free-born Englishmen; and those very planters are united in the support of the system by which they are impoverished, and the people by whom they are thus denounced!

The following article on the position and prospects of the cotton trade, received at the moment that the above was in the press, so fully confirms the views given in a previous chapter, that I am induced, long as it is, to reprint it at full length. It is from the London *Economist*,† the highest free-trade authority in Europe:

"The quarters whence Great Britain draws her supply of raw cotton may be classed under five divisions:—North America, Brazil, Egypt, India, and Miscellaneous Countries, chiefly our own colonies. On the increase of production in these lands, and on the proportion of that increase which is sent to this country, depends our capability of extending our cotton manufacture, or even of maintaining it at its present level. Let us therefore consider each of these sources of supply in turn, that we may be able to form a fair esti-

* Coleridge. Six Months in the West Indies. † Dec. 1, 1849.

mate of our expectations from each. North America, as the most important, we will leave to the last.

Brazil is the chief source whence we draw our supply of long-stapled cottons. Brazil has sent us as follows:

Brazil Cotton.

	Bales imported in five years.	Bales imported per annum.
1830—1834, inclusive	744,884	148,977
1835—1839 —	643,438	128,687
1840—1844 —	471,226	94,245
1845—1849 —	495,685	99,137

In this and the succeeding tables the imports for 1849 have been found by adding to the *known* imports for the first ten months, the quantity we have yet reason to expect, or that which ordinarily arrives in November and December.

From Brazil, therefore, our annual supply has diminished nearly 50,000 bales; or if we compare the two extreme years of the series, 1830 and 1848, the falling off is from 192,267 bales to 100,244, or 92,000 bales.

Egypt.—Our Egyptian supply, which is also long-stapled cotton, has ranged as follows:—

Egyptian Cotton.

	Bales imported in five years.	Bales imported per annum.
1830—1834, inclusive	99,899	19,899
1835—1839 —	173,031	34,606
1840—1844 —	207,913	41,583
1845—1849 —	224,579	44,918

The supply from Egypt, however, seems to have reached its maximum in 1845, in which year we received 81,344 bales. This year it does not reach half that amount. Moreover, this country, from the peculiar circumstances of its government, is little to be relied upon,—the supply having varied from 40,290 bales in 1832 to 2,569 bales in 1833; and again from 18,245 bales in 1842, to 66,000 bales in 1844.

From Other Quarters, chiefly the West Indies, the supply has been:—

Miscellaneous.

	Bales imported in five years.	Bales imported per annum.
1830—1834, inclusive	68,873	13,775
1835—1839 —	161,369	32,274
1840—1844 —	117,887	23,577
1835—1849 —	44,833	8,966

East Indies.—Our supply from this quarter varies enormously, from 90,000 to 270,000 bales per annum, inasmuch as we only receive that proportion of the crop which our prices may divert from China or from internal consumption. Our imports thence have been as follows.

East India Cotton.

	Bales imported in five years.	Bales imported per annum.
1830—1834, inclusive	403,976	80,795
1835—1839 —	723,263	144,653
1840—1844 —	1,167,294	233,459
1845—1849 —	899,213	179,852

The summary of our supply from all these quarters combined is:—

Summary.

	Imports in five years.	Imports per annum.
1830—1834, inclusive	1,317,632	263,526
1835—1839 —	1,701,101	340,220
1840—1844 —	1,964,320	392,864
1845—1849 —	1,664,310	332,862

The result of this inquiry, then is, that our average annual supply from all quarters, *except the United States*, was in five years ending 1849 *less* by 7,358 bales than in the five years ending 1839, and *less* by 60,000 bales than in the five years ending 1844. Of this *diminished* supply, moreover, we have been exporting an *increasing* quantity, *viz*:—396,000 bales in the last five years, against 342,000 bales the previous five years.

UNITED STATES.—We may now turn our attention to our last and main source of supply, America, which has sent us:—

American Cotton.

	Imports in five years.	Imports per annum.
1830—1834, inclusive	3,241,958	648,391
1835—1839 —	4,308,610	861,722
1840—1844 —	5,802,829	1,160,566
1845—1849 —	6,188,144	1,237,619

The last five years, it should be observed, include the three largest crops ever known, one very deficient, and one rather so.

It is a known and admitted fact among those conversant with these matters, that a price of 4*d.* a lb. for middling uplands, laid down in Liverpool, leaves sufficient profit to the American planter to induce him to grow as much cotton as his negroes can gather; and that, therefore, as the average price has scarcely ever ranged so low as this for any great number of weeks, the *possible* increase of the crop of cotton will keep pace with the *actual* increase of the Negro population; and cannot do more. Now the negroes increase at a very regular rate of 3 per cent. per annum. If, therefore, these premises be correct, it will follow that the cotton crop of each year will surpass that of each preceding year of *equally favourable conditions* (*i. e.*, as to good planting and picking weather, late frosts, freedom from worms, inundations, &c.) by 3 per cent. Accordingly, we find this to have been pretty closely the case, as the following tables will show. The years 1840, 1843, and 1845, were very favourable years for the growth and gathering of cotton. Let us see what crop each of these years, calculated on the above bases (3 per cent. yearly increase,) would give for 1849, also a favourable year:—

	Actual crop.	No. of years.	Per cent.	Estimated crop of 1849.
1840	2,178,000	9	27	2,866,000
1843	2,379,000	6	18	2,807,220
1845	2,394,000	4	12	2,681,280
Average				2,784,833
Actual crop				2,730,000

From the following table it will be seen that, assuming the year 1838 as a starting point, the average increase of the American crop for the last 12 years has not quite reached 3 per cent.: and in fact wherein for any short series of years this rate has been exceeded, it has been attributable simply to an unusual run of favourable seasons.

Year.	What the crop would have been with no extraordinary casualties, and increasing at the rate of 3 per cent. yearly.	Actual crop.	
1837—38	—	1,801,500	
1838—39	1,855,500	1,360,500	
1839—40	1,911,200	2,178,000	
1840—41	1,968,500	1,635,000	
1841—42	2,027,500	1,683,500	
1842—43	2,088,300	2,379,000	
1843—44	2,151,000	2,030,500	
1844—45	2,215,000	2,394,500	
1845—46	2,282,000	2,100,500	
1846—47	2,350,500	1,778,500	
1847—48	2,421,000	2,347,500	
1848—49	2,493,000	2,728,500	
1849—50	2,568,300	2,350,000	estimated
Average	2,194,400	2,080,500	

It is clear, then, that we shall be sufficiently near the mark for any practical conclusions, if we assume the average increase of the American cotton crop at 3 per cent. per annum, barring any *unusual* freedom from, or occurrence of, disasters, such as sometimes happen. Let us now inquire what proportion of this increase will fall to our share.

The consumption of the United States itself has been steadily on the advance, and now increases at an average annual rate of about 35,000 bales. It is now about 520,000 bales yearly. That of the continent now reaches (of American cotton) about 700,000 bales. America and the continent, therefore, require about 1,200,000 bales at present, and will require more each year. Moreover, they will always take precedence of Great

Britain, as their margin of profit is larger, and a small increase of price is of less consequence to their manufacturers than to ours, and checks consumption less. The following table will throw much light on this question:

5 Years.	Grop of American cotton.	Import of American cotton into Great Britain.	Export of American cotton from Great Britain.	American cotton retained for home consumption.
1840—44	9,905,638	5,802,829	295,600	5,507,229
1845—49	11,349,921	6,188,144	596,640	5,591,504
Increase	1,444,283	385,315	301,040	84,275

From this table it appears, that, while the *growth* of American cotton in the last five years exceeded that of the previous five by the unprecedented quantity of nearly one million and a half of bales, of this increase only 385,000 reached this country, *and of this we had to re-export more than three-fourths*, leaving an annual increase *available for home consumption* of only 17,000 bales. For any augmentation of consumption beyond this, we have been drawing on our stocks.

We will now bring into one view the *whole* supply and the *whole* consumption *of all kinds of cotton* in Great Britain during the last ten years:

Years.	Bales imported from all quarters.	Bales exported.	Retained for home consumtion.	Supply for home consumpt'n annually.	Actual consumption annually.	Actual consumpt'n weekly.
1840—44	7,767,149	637,650	7,129,499	1,425,900	1,290,480	24,810
1845—49	7,852,454	992,850	6,859,604	1,371,920	1,477,360	28,410
Increase	85,305	355,200	. .	. .	186,880	3,600
Decrease	. .	. .	269,895	53,980		

We have taken the actual consumption of 1849 at 1,650,000 bales only, for reasons hereafter stated.

Now, *bearing in mind that the figures in the above tables are, with scarcely an exception, ascertained facts, and not estimates*, let us sum the conclusions to which they have conducted us; conclusions sufficient, if not to alarm us, yet certainly to create much uneasiness, and to suggest great caution on the part of all concerned, directly or indirectly, in the great manufacture of England.

1. That our supply of cotton from miscellaneous quarters (*excluding* the United States) has for many years been decidedly, though irregularly, *decreasing*.

2. That our supply of cotton *from all quarters*, (including the United States,) available for home consumption, has of late years been falling off at the rate of 1,000 bales a week, while our consumption has been increasing during the same period at the rate of 3,600 bales a week.

3. That the United States is the only country where the growth of cotton is on the increase; and that there even the increase does not on an average exceed 3 per cent., or 80,000 bales annually, which is barely sufficient to supply the increasing demand for its own consumption, and for the continent of Europe.

4. That no stimulus of price can materially augment this annual increase, as the planters always grow as much cotton as the negro population can pick.

5. That, consequently, if the cotton manufacture of Great Britain is to increase at all, *on its present footing*, it can only be enabled to do so by applying a great stimulus to the growth of cotton in *other* countries adapted for the culture.

Within the memory of many now living, a great change has taken place in the countries from which our main bulk of cotton is procured. In the infancy of the manufacture, our chief supply came from the Mediterranean, especially from Smyrna and Malta. Neither of the places now sends us more than a few chance bags occasionally. In the last century, the West Indies were our principal source; in the year 1786, out of 20,000,000 lbs. imported, 5,000,000 came from Smyrna, and the rest from the West Indies; in 1848, the West Indies sent us only about 1,300 bales; in 1781, Brazil began to send us cotton, and the supply thence continued to increase, though irregularly, till 1830, since which time it has fallen off to one-half. About 1822, Egyptian cotton began to come in considerable quantities, its cultivation having been introduced into that country two years before. The import exceeded 80,000 bales in 1845; the average of the last three years has not been a third of that quantity. Cotton has always been grown largely in Hindostan; but it did not send much to England till about thirty years ago. In the five years ending 1824, the yearly average import was 33,500 bales; in 1841, it reached 274,000, and may now be roughly estimated at 200,000 bales a year.

Now, what is the reason why these countries, after having at one time produced so largely and so well, should have ceased or curtailed their growth within recent years? It is clearly a question of price. Let us consider a few of the cases:

At the close of the years	Lowest price of Pernambuco.	Fall per. ct.	Lowest price of Maranham.	Fall per ct.	Lowest price of Egyptian.	Fall per ct.	Lowest price of Surat.	Fall per cent.
1836—39 inclusive	9½*d.*	—	8¼*d.*	—	10¼*d.*	—	4⅝*d.*	—
1840—43 . .	7	—	5⅝	—	7	—	3½	—
1844—48 . .	5⅞	36	4⅞	42	5⅞	43	2¾	40

Here, surely, may be read the explanation of the deplorable falling off in our miscellaneous supply. From the four years ending 1839, when the great stimulus was given which procured us so ample a supply during the succeeding period, to the quinquennial period ending 1848, there has been a fall in price, on an average, of 40 per cent. Unless, therefore, we assume either an enormous margin of profit in the earlier period, or an extreme diminution in the cost of producing the article of late years, such a fall in price would be quite sufficient to direct capital and industry into other channels, and to prevent so bulky an article as cotton from being grown or forwarded.

In both Brazil and India, freight and carriage form an inordinate proportion of the price of cotton. In both countries the bales are carried great distances on the backs of mules or other beasts of burden. The deficiency of good roads, convenient vehicles, and safely navigable rivers, in the cotton districts of both countries, swells the expense of bringing the bales to the shipping ports to such an extent, that, when prices are low in England, the ultimate net remittance to the planter is quite insufficient to repay the cost of growing, picking, and packing. In some years, the price of much of the Surat cotton sent to this country was so low as only to remit *one penny* a pound to the shipper at Bombay; and by the time this reached the actual grower, it had probably dwindled away, through the expenses of carriage, to a sum inadequate even to pay the government rent. Our supply from both these countries will depend entirely upon price. In Brazil, where we believe the sugar cultivation is less profitable than formerly, a range of prices 50 per cent. higher than those of the last few years would probably induce the planters to increase their cotton grounds, and would repay them for so doing. In regard to the East Indies, where large quantities are always grown, our supply thence depends upon two things—first, the demand for China, which is usually supplied before Great Britain; and, secondly, on the question whether the net price at Bombay or Madras will pay for picking, cleaning, packing, and transporting to the coast. Under the stimulus of high prices, (such as prevail at this moment,) large quantities, would, we doubt not, be sent forward; and the price that will be requisite to secure such large supplies will diminish as the means of carriage are increased and cheapened. If the prices of the last five years continue, we believe there can be no doubt that the supply will inevitably continue to fall off.

We do not, however, participate in the sanguine expectations which many parties entertain, that even with higher prices the quantity and quality of East Indian cotton sent to this country can progress so rapidly as to render us at all independent of the American supply. For, in the first place, the absence of good roads or navigable rivers in the cotton districts, the length of time and expenditure of capital needed before the want of those can be supplied by the establishment of railroads, and the languid and unenterprising character of the people, must necessarily cause any material increase of supply (at least over 250,000 bales per annum) to be a matter of very slow and costly operation. And, in the second place, the *quality* of the cotton grown in India is peculiar; and this peculiarity is still traceable, though in a modified degree, in whatever locality and from whatever seed the plant is grown, even in the best specimens (improved as they unquestionably are) which have of late been sent to this country; and this peculiarity will always, we fear, prevent it from being substitutable for American cotton, except to a very limited extent.

Our hopes lie in a very different direction; we look to our West Indian, African, and Australian colonies, as the quarters from which, would government only afford every *possible* facility, (we ask and wish for no more,) we might, ere long, draw such a supply of cotton as would, to say the least, make the fluctuations of the American crop, and the varying proportion of it which falls to our share, of far less consequence to our prosperity than they now are.

The West Indies, as we have already seen, used to send us, sixty years ago, about 40,000 bales, or three-fourths of our then supply. But the enormous profits realized on

the growth of sugar, partly caused, and much prolonged, by our prohibitory duties on all competing sugars, directed the attention of the colonists exclusively in that direction. As in the analogous case of protected wheat in this country, other cultivation was gradually abandoned in favour of a single article; the cane was grown in soils and localities utterly unfit for it, and into which nothing but the protective system could have forced it, and cotton was soon altogether neglected. Many parts of the West Indies, St. Vincent especially, which are worst adapted for the cane, are the best adapted for the cotton plant, which flourishes in light and dry soils, and especially near the sea-coast. The artificial stimulus which our mistaken policy so long applied to sugar cultivation, having been withdrawn, it must be abandoned in all unsuitable localities, and would be well replaced by cotton. What price would be required to repay its culture there, we cannot say; but considering at how small a cost it might be placed on ship-board in all these colonies, and how large a portion this item generally forms of the whole expense of production, we cannot see why cotton should not be grown in the Antilles as cheaply as in the United States, if only the negroes can be relied upon for steady and continuous labour during the picking season. Now, the price of West Indian cotton ranges higher than that of the bulk of the American crop, as being longer in staple. Our belief is, that were the attention of our planters once energetically directed to this article, they might soon send us a regular supply of 100,000 bales per annum, and thus find a use for many estates that must otherwise be abandoned.

The experiment of cotton growing has already been tried with success in one of our most hopeful African colonies—Port Natal. We have already received above 100 bales from this colony—the main portion of which consists of the indigenous cotton, very similar to that shipped from New Orleans, clean, fine, tenacious, but of a light brown colour. On the whole, it is a most admirable article for ordinary purposes, and worth in the market to-day nearly 7*d.* per pound. The remainder of the shipments have been grown from the sea-island seed, and are of excellent quality. The cultivation is rapidly increasing, and about 500 bales are expected next year from the colony. A society has been formed for promoting emigration thither, and a ship full of emigrants sailed a few days since. Mr. Byrne, the agent, says:

"Natal is situated in a sunny and bright region. It has iron, lead, coal, and copper in abundance, and with British industry might be made one of the finest and wealthiest countries on the globe. The country is admirably calculated for the growth of cotton, some of which is of a superior description. In America, cotton was chiefly cultivated by slave-labour at a cost of about 35*l.* a year for each slave; whereas at Natal the labour of the Zooloos could be purchased at a cost of 10*s.* a month; and Natal too, from its proximity to the sea, was most advantageously situated for carrying on the trade with England in competition with the States. I would not advise you to cultivate sugar; you will be able to get that article perhaps better from the Mauritius, where you will find a highly remunerative market for all agricultural produce. I intend in the beginning of the year to send out a screw steamer to run to and from that island and Natal."

From Australia we have as yet had no bulk of supply, but several acres are under cultivation, and the samples sent are of so fine a quality as to prove beyond question the adaptation of the soil and climate for the production of as good an article as any grown in America. We have now lying before us, along with the Port Natal cotton, samples of some grown from sea-island seed at Bolwarra, in New South Wales, near Maitland, about 80 miles north of Sydney. It is long, fine, and silky.

We believe that, under due encouragement, the cultivation of cotton in these quarters might increase in a steady ratio equal to our increasing demand. Let us now see, on a summary, how the matter stands.

We have seen that of the American cotton crop, our annual supply during the last five years has nearly reached 1,120,000 bales, and that, *the yearly increase of the crop being balanced by the yearly increasing demand for the United States and for the continent*, there is little probability of our ever getting more than this *on an average*. Let us suppose that a due advance in price raises the production of Brazil to what it had attained in 1830, and that of India nearly to what it was in 1841, and that Egypt and our own colonies will again send us some appreciable and increasing imports:

		Bales per annum.
United States	say	1,200,000
Brazil		200,000
India		250,000
Egypt		50,000
Our colonies		50,000
		1,750,000

This would allow us a supply of 33,500 bales a week, the apparent consumption of this year. For any addition to this we must depend on the increase of the colonial supply, or on that which a still higher range of prices will enable us to wring out of India and Brazil. The conclusion from the whole clearly is, that, in order to secure such a supply of the raw material as is needed to meet our own present consumption, *we must be prepared to pay a decidedly higher range of prices than has of late years obtained;* that, in fact, the average prices of the last five years have proved quite inadequate, in spite of large crops in America, to draw to this country sufficient cotton to enable our actual machinery to work full time. Higher prices, therefore, *must* obtain in future; nor should spinners and manufacturers wish it otherwise; for experience has fully shown them that no circumstances can cause them so great or so certain a loss as an inadequate supply of the raw material, and higher prices can alone avert this supreme evil.

So much as to the probable sufficiency of the supply of the raw material to this country, *on the supposition that the consumption is what it appears to be, and will continue what it is.* But are we justified in these two assumptions? Let us put together a few facts which bear upon the question.

And, first, let us ascertain what the actual consumption has been during the last ten years. We know this with accuracy for nine years, and for the first ten months of this year. During these ten months, the deliveries to the trade have reached 1,495,000 bales. But we know that, during the latter portion of this period, manufacturers have been purchasing far more than they need for actual use, and that, while the actual quantity worked up has, in consequence of a general tendency towards the production of finer fabrics, been *decreasing* since the beginning of June, the purchases of cotton have been *increasing*, till, in October, they reached the unprecedented amount of 217,000 bales. A lull has now taken place, and we believe we shall not be far wrong in assuming that the purchases of the trade, during the last nine weeks of this year, will not exceed 205,000 bales; and that, in that case, they will hold at the end of the year 50,000 bales more than usual in stock. This would give the consumption of the year at 1,650,000 bales. Our own impression is, that this estimate is rather over than under the mark, and that spinners hold a larger stock than we assume; but, in any case we cannot be sufficiently wide of the truth to affect our conclusions.

Year.	Weekly consumption of cotton in Great Britain.	Year.	Weekly consumption of cotton in Great Britain.
1840	24,868	1845	30,120
1841	22,134	1846	30,000
1842	22,949	1847	21,270
1843	26,693	1848	28,950
1844	27,439	1849	31,730

Now, we wish our readers to consider this table carefully, and notice the extraordinary *fluctuations* in the quantity of cotton worked up each year, in connection with the facts we are about to state. The weekly average fell nearly 3,000 bales from 1840 to 1841; then jumped up nearly 4,000 bales from 1842 to 1843; in 1845 and 1846, it remained stationary at a high figure; and (passing over for obvious reasons the anomalous year of 1847) it had again fallen in 1848, when the quantity only exceeded that of *eight* years previously by 4,000 bales. *Yet, during the whole of this period, the machinery engaged in the cotton manufacture was constantly,* though not regularly, *increasing;* and, except for a short period in 1842, (and in 1847, which last year we have thrown out of our calculation,) the mills were, we believe we are correct in stating, all at full work. Indeed, "short time" is attended with too tremendous a loss to the mill-owner ever to be resorted to, except under the direst pressure. During the last year, we see the consumption has increased nearly 3,000 bales a week, though the hours of labour have been reduced, by legislative enactment, from eleven to ten per diem.

All these considerations point clearly to the conclusion, that *our consumption of the raw material is not a fixed, but a varying quantity,* and is affected by some other causes than either the amount of machinery in operation, or the hours during which it is employed. What this cause is, and the extent to which it is capable of operating, we can be at no loss to discover.

The weight of raw cotton consumed by a given amount of machinery varies according to the nature of the article produced. We produce in England fabrics of which the raw material forms *two-thirds* of the value, and fabrics of which it forms not *one-fiftieth* of the value. We spin yarns of which the raw materials cost *three-fourths*, and yarns of which it costs *one-twentieth*, of the finished price. We have spindles that produce two pounds of yarn a week, and spindles that do not produce two pounds a quarter. But, without

going to these extreme varieties, we will here copy a statement made by Messrs. Du Fay & Company in their monthly circular, the accuracy of which we can fully confirm. They say:

840	spindles,	working	20's	twist,	will consume	1,340	lbs.	of cotton
840	"	"	30's	"	"	840	"	
840	"	"	40's	"	"	525	"	
840	"	"	60's	"	"	224	"	

Now, though machinery accustomed to produce No. 20's cannot produce No. 60's, yet it can, without material change or difficulty, produce No. 30's; and machinery adapted for No. 30's can change to No. 40's, and so on. In fact, every mill has a range of *at least ten numbers*, by varying which it can reduce or augment its consumption of cotton *easily* from 25 to 50 per cent. The same may be said of weaving mills. In many mills, looms may be seen working side by side of the same construction, some of which produce 60 lbs. a week, and others only 25 lbs. We could mention at least one mill where the amount of raw cotton worked up weekly varies, according to the fineness of the article produced, to meet the fluctuating demands of the market, from 30,000 lbs. to 18,000 lbs.; and we find in the *Manchester Guardian* of last Saturday the following corroborative statement:

"Some idea of what a change of numbers will effect may be gathered from the following instances; the names of the firms are before us:

	Reduction.		Previous weekly consumption.
No. 1	10,000 lbs.	out of	40,000 lbs.
No. 2	18,000 lbs.	—	60,000 lbs.
No. 3	25,000 lbs.	—	115,000 lbs.
No. 4	10,000 lbs.	—	30,000 lbs.
No. 5	10,000 lbs.	—	30,000 lbs.
No. 6	70 bls.	—	120 bales.

We have been informed by another very extensive spinner, that the reduction in his establishment is more than 40,000 lbs. per week."

It is not easy to ascertain the extent to which this change from coarser to finer numbers is actually carried at any particular period. We know, however, that it does go on to a very great extent, and has done so, perhaps almost unprecedentedly, during the last six months; and, when we consider the immense proportion of the *weight* of cotton used in England, which is consumed by the makers of heavy cloths and coarse yarns, we think we may safely affirm that a *brisk* demand for printers, shirtings, and India yarns on the one hand, with a *dull* demand for domestics, long-cloths, and German yarns on the other, or a reversal of these conditions of the market, if continued for any time, will make a difference of at least 25 per cent. in the weight of raw cotton consumed.

Now, an advance in the price of cotton is much more strongly felt in the coarser yarns and the heavier cloths than in the finer ones. An advance, such as has taken place in the last twelve months, of nearly 3*d.* per lb. on the raw material of a stout calico which ordinarily sells in the finished state, at 8*d.* per lb. is nearly 40 per cent. on the manufactured article. On a printing cloth, or a fine shirting, which sells at 12*d.* per lb. it is only 25 per cent.; and on the piece *when printed*, it is far less than this—in fact a mere trifle. Or, to put it in a still clearer light, an advance of 3*d.* per lb. on a heavy domestic calico, will compel the purchaser to pay 4*d.* where he formerly only paid 3*d. per yard.* The same 3*d.* per lb. will be 15*d.* on a piece of printing cloth 30 yards in length, which, when printed, sells in the shops at about 12*s.* 6*d.*; in other words, it will raise the price to the customer from 5*d.* to 5½*d. per yard.* Now, this advance, which is only ten per cent., is not sufficient materially or rapidly to check consumption; the other advance, which is 40 per cent., is. It is clear, therefore, that an advance in the price of the raw material will check the demand for, and consequently the production of, heavy fabrics, much sooner and more decidedly than that of light ones. Accordingly, as the following table will show, *the range of prices* is more limited in the former than in the latter; and never keeps pace with, or nearly so, that of the raw material:—

	Price per lb. of the following articles in November.					Extreme range.
	1845.	1846.	1847.	1848.	1849.	
	d.	*d.*	*d.*	*d.*	*d.*	*d.*
Raw cotton, fair uplands	4½	6	5⅛	4	6½	2½
No. 20's water twist, good seconds	9	8¼	7¾	6¼	8½	2¾
No. 40's mule twist, fair seconds	10	9¼	8¼	7	9½	3
Stout domestics, 18½ lbs. for 60 yds.	9¼	9¼	9¼	8	8¾	1¾
Medium domestics, 12 lbs. for 60 yds.	11¾	11¼	9¾	9¼	10	2½
Printing cloths, 27 in. 72 reed, 5 lbs. 2 oz.	13	13¼	12¼	10¾	14¼	3½

It is obvious from this table that while printing cloths have a range of price even exceeding that of raw cotton, and find no difficulty, where there is a reasonably brisk

trade, in following its fluctuations, the very reverse is the case with heavy domestics, into which a very disproportionate bulk of the raw material is worked up, when compared with the machinery employed. For these last-mentioned articles there is a very extensive demand *at low prices;* but with any material advance, this demand immediately falls off. A great proportion of them is exported in the form of T cloths and long-cloths to Portugal, the Mediterranean, and the Levant, as long as prices range about 8*d.* a lb.—when it approaches 9*d.* this export is almost wholly suspended, and the manufacturers who ordinarily supply it, are compelled to turn their attention to other fabrics.

Another cause contributes to this change. In unprofitable years, such as always occur when the raw material is deficient in quantity and has rapidly become enhanced in value, (as in the present year,) every manufacturer is of course anxious both to minimize his loss, and to make his capital go as far, and last as long, as he can. It is evident that this will be best effected by turning his machinery to the finest range of numbers it is fitted to produce, and working up (say) 20,000 lbs. instead of 30,000 lbs. of cotton weekly. Moreover, in years when trade is dull, and when manufacturers, from inability to sell, are compelled to accumulate stocks, the same inducement to produce as fine fabrics as possible is still more strongly felt. A manufacturer with 500 looms on light printing cloths can afford to hold a stock of 50,000 pieces, or four months' production, but a manufacturer with 500 looms must have a much larger capital who can afford to hold 25,000 pieces, or four months' production of heavy domestics. In round numbers, the first would have 12,000*l.* and the second 18,000*l.* locked up.

From a combination of all the above considerations—from observing that this change from coarser to finer fabrics has often occurred in the past—from knowing how easily, and to what an extent, it may be effected—and from perceiving the vast inducement which such a rise in the value of cotton as has recently occurred offers to this change—we feel no doubt that such change has, during the last six months, been carried to a far greater extent than is generally estimated; and we question whether the actual consumption is at this moment within 5000 bales per week of what it appeared to be in May last, nor within 3000 of what it actually was. We feel convinced, too, that with our present and future prospects as to the supply and price of the raw material, as developed in the early part of this paper, our manufacture must run more than it has done of late years upon the finer yarns and fabrics, and consequently that our consumption of cotton (till the supply from miscellaneous quarters has been greatly augmented) must tend to *decrease* rather than otherwise, notwithstanding the increase and improvement of machinery; that (to sum up the whole) *those speculators who refuse to believe in a diminished consumption, and those manufacturers who refuse to face the fact of an inadequate supply, will find themselves equally in error, and in danger.* We particularly call the attention of the latter parties to the consideration that the better or worse accounts of the coming American crop in no degree affect our argument. We have assumed it at 2,350,000 bales—the highest estimate being 2,400,000 bales.

There are yet other reflections which tend to corroborate this conclusion. We are not without indications that we have over-estimated and outrun the demand for the manufactured article from our existing markets, as much as we have outrun the supply of the raw material from existing sources. It is probable that the world's requirement of cotton goods about keeps pace with the world's growth of cotton wool. But unfortunately our machinery has increased faster than either. We can produce more calico than is wanted, and we can consume more cotton than is grown. We think that, in endeavouring to ascertain this, we may safely take the data of the last five years as our basis, since, though the demand for our manufactures has in that period been checked by a tremendous political and commercial convulsion, yet on the other hand it has been increased during a portion of that time by an unexampled expenditure among the working classes, (in the form of wages to railway labourers and others,) and the supply has been checked by one of the most deficient cotton crops known for many years.

We have constructed the following tables with the greatest care, and from the best information we can obtain. We believe they will be found essentially correct:—

No. 20's *Water twist.*

	Price of cotton per lb.	Cost of workmanship and waste.	Total cost.	Selling price.	Profit.	Loss.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*
1845	4·25	3	7·25	9	1·75	—
1846	6	3·25	9·25	8·25	—	1
1847	4·7	3·1	7·8	7·8	—	—
1848	3·6	3	6·6	6·25	—	0·35
1849	6·25	3·20	9·45	8·45	—	1

No. 40's Mule twist.

	Price of cotton.	Cost of workmanship and waste.	Total cost.	Selling price.	Profit.	Loss.
	d.	d.	d.	d.	d.	d.
1845	4·5	4	8·5	10	1·5	—
1846	6	4·2	10·2	9·25	—	0·95
1847	5	4·1	9·1	8·25	—	0·85
1848	4	4	8	7	—	1
1849	6·5	4·2	10·7	9·25	—	1·45

The prices here given are those of November in each year, both in this and the subsequent tables.

Stout Domestics.

	Price of cotton per lb.	Workmanship and waste.	Total cost.	Selling price.	Profit.	Loss.
	d.	d.	d.	d.	d.	d.
1845	3·75	4	7·75	9·25	1·5	—
1846	5·6	4·2	9·8	9·36	—	0·5
1847	4·25	4	8·25	9·25	1	—
1848	3·25	3·35	7·1	8	0·9	—
1849	5·7	4	9·8	8·75	—	1·05

Medium Domestics.

	Price of cotton per lb.	Workmanship and waste.	Total cost.	Selling price.	Profit.	Loss.
	d.	d.	d.	d.	d.	d.
1845	4·25	5·50	9·75	11·75	2	—
1846	6	5·75	11·75	11·25	—	0·5
1847	4·75	5·25	10	9·75	—	0·25
1848	3·65	5	8·65	9·25	0·6	—
1849	6·45	5·5	11·75	10	—	1·75

In estimating the second column in all these tables, we have taken into account both the economy, in the cost of workmanship, where there has been any, and also the variation in the waste owing to the varying price of cotton, which will account for the slight fluctuations observable.

Printing Cloths.

	Price of cotton.	Workmanship and waste.	Total cost.	Selling price.	Profit.	Loss.
	d.	d.	d.	d.	d.	d.
1845	5	6·85	11·85	13	1·15	—
1846	6·5	7	13·5	13·25	—	0·25
1847	5·5	6·75	12·25	12·25	—	—
1848	4·5	6·5	11	10·75	—	0·25
1849	6·25	6·75	13·5	14·25	0·75	—

It is important to observe that the experience of isolated *individuals* will not invalidate the conclusions of these tables, which show the margin between the raw material and the manufactured article *at the prices of the day*. These prices vary much during the year; and a manufacturer who has laid in his cotton at the cheapest time, and made his contracts of sale at the dearest, may realize a profit, though the general trade incurs a loss. The only case in which these tables may lead to an incorrect conclusion is, where the relative prices in *November* are not fair representatives of the average prices of the year. In the year 1847 this was the case, the margin between cotton and yarn, or cotton and cloth, being much *greater* in November than during the chief part of the year, and the *loss* consequently far *less*. The average of that year left a large loss on all articles.

From these tables it would appear—as indeed has been well known to all connected with the trade—that our cotton-spinners and manufacturers on an average, and with a few exceptions, have been carrying on their works to a loss, ever since 1845. This has occurred during a period in which the price of the raw material has fluctuated upwards and downwards at least 40 per cent. Now can it be supposed that they would have encountered the impossibility, which it is evident they *have* encountered, of obtaining remunerating prices, if they had not produced more than our actual markets can, on an average of years, take off?

At the beginning of this year, great expectations were entertained of our home demand. It was argued, and with good reason, that we never yet had a year of general employment and low prices of provisions combined, which was not also a year of very large domestic consumption of manufactured fabrics. This year labour has been in very brisk request, and food has never been so cheap and plentiful since 1836. Yet our expectations

from these facts have not been fully answered. The sellers of printing cloths and medium shirtings report that their home demand has, on the whole, been good; the sellers of domestics report, on the contrary, a decidedly dull business, worse than that of last year; but we believe all agree that the anticipations with which they began the year have by no means been realized. We suspect the cause to be this:—The depreciation in railway property, the effects of the Irish famine, and the commercial crash in 1847, have impoverished all classes of the community to a much greater extent than has been allowed for in the calculations of our tradesmen. We question whether "the power of purchase," on the part of the British community, is nearly equal to what it was in 1845. One fact alone may enable us to guess at the degree to which its aggregate means of expenditure must have been reduced. In round numbers, the sum *actually expended* in railways is 210 millions: their *actual value* at the prices of the day does not exceed 100 millions; and many of them pay little or no dividend.

Let us now sum up the conclusions which our tables have solved:—

1. Our supply of cotton has materially fallen off during the last few years, and will not increase except under the stimulus of much higher prices than have (till the last few months) obtained.

2. That under such ranges of prices our consumption will not maintain its present apparent rate, (or say 32,000 bales a week,) whatever be the increase or improvement of machinery.

3. That, except under the stimulus of low prices, our existing markets *cannot* take off as much as our machinery *can* produce.

4. That the practical deductions pointed to by these facts are two—*first*, a permanent tendency towards the production of finer fabrics; and *secondly*, a check to the increase of mills and machinery—of our producing power—that is, till the increased supply of the raw material on the one hand, and an increased consumption of the manufactured product on the other, shall once more have restored the balance."

It is here stated that the consumption of the last five years is greater by 3600 bales per week than in the previous five, but it is not shown whence this cotton came. The whole quantity retained for consumption in the second period is less by 269,000 bales than in the first, and yet the consumption is said to have been greater by 187,000 per annum, or a total quantity of 935,000 bales, which added to the deficiency in the quantity retained, would make 1,200,000 bales. The stock of American on hand at the close of 1849 was less by 400,000 bales, and that of other descriptions may have been reduced 250,000; but even this leaves 550,000 to be accounted for. It is scarcely possible to examine the figures given in this paper without arriving at the conclusion that the consumption is exaggerated.

Admitting, however, all that is claimed, I will now proceed to show how large a portion of this increase has resulted from the existence of *protection* elsewhere. It has been shown* that our import of cotton goods in two years, ending June 30, 1843, the period of *almost free trade*, was very small, the average having been but $7,184,000. If, now, to this we add the increased import of the year ending June, 1844, we obtain an average of about . $9,000,000
From June, 1844, to June, 1849, the average was about . 16,000,000
During one-half of this period the tariff of 1842 was in existence, and during more than half of the balance, that of 1846 was almost altogether inoperative—and for the balance of the time the duty has been thirty per cent. Nevertheless, the amount *imported*† has been almost double, and the excess is not less than three-fourths of a pound per head, making an average of about 35,000 bales per annum.

* Page 394, *ante*.

† By reference to the tables in Chapters II. and III. it will be seen that much of these imports in the last two years was obtained in exchange for certificates of debt, and therefore deducted from the amount of import as there given, the object in constructing those tables having been that of showing what was the *power of consumption* resulting from the *power of production*, not that which resulted from the impoverishing system of buying goods on credit.

The average import of yarn into the other protected country, the *Zoll-verein*, from 1837 to 1841, was 351,000 quintals. That of 1843 was 475,000, and the average from 1840 to 1844 was probably about 440,000. In 1845 it was 574,000. Taking that as the average from 1845 to 1849, as it appears to have been,* we have an excess of 134,000 cwts. of yarn, equal to 40,000 bales of raw cotton.

The two together make 75,000, which, being deducted from the excess consumption alleged to have taken place, leave 112,000, and the account will now stand thus . . . 1840–44 annual average 1,290,000
1845–49 " " 1,402,000
showing an increase of little more than *eight* per cent., while the low prices of the second period have been lower than those of the first by *twenty-five* per cent. It is obvious that the increase, trivial as it has been, *among the unprotected consumers*, has been obtained at the cost of the planter, and that the amount collected from the population of England and that of the world at large for his use, was greatly less in the second period than in the first. The consumption of American cotton in Great Britain, in the present year, is estimated at only about 1,100,000 bales, being little more than it was ten years since, when the average price was as high as at present. It is clear from this the market of England cannot be made to grow in such manner as to keep pace with our production. Why it cannot, and will not, may, I think, readily be shown by an examination of the operations of the past year, in which there has existed no railroad speculation, no famine, no potato-rot, and in which, on the contrary, every thing has tended to produce a perfect realization of the anticipations of the most sanguine friend of the existing system.

The total value of exports of the kingdom for the ten months ending November 5, 1849, was	£49,400,000
The total of grain, and flour and meal as grain, imported in the same period, was 10,300,000 quarters, which, at an average of 36*s.* per quarter, would amount to about £18,500,000, and with 43,000 tons of potatoes, to about	18,600,000
The number of oxen, bulls, cows, sheep, &c., 144,000, say	150,000
Of bacon, beef, pork, hams, butter, cheese, and lard, 1,500,000 cwts., which at 30*s.* would be	2,250,000
Grand total of commodities now imported, but with which the people of the United Kingdom supplied themselves almost entirely only a few years since .	£21,000,000
Deducting these, the amount of exports remains . .	28,400,000
The exports of cotton manufactures and yarn (£5,833,000) amounted to £22,550,000, and if we estimate the cotton required for their production at three-eighths of this amount, we obtain as its value	8,500,000
The wool imported to be manufactured and exported amount-	

* The export of yarn to the ports through which Germany is supplied, in four of those years was as follows :—

	1845.	1846.	1847.	1848.
Belgium, lbs. . .	3,917,000	5,359,000	3,520,000	3,168,000
Holland " . .	21,556,000	24,662,000	16,206,000	18,877,000
Hanse Towns, &c. .	40,315,000	45,041,000	36,123,000	32,910,000
Total lbs. .	64,788,000	75,062,000	55,849,000	54,955,000

ed to nearly 60,000,000 of pounds, which, at a shilling a pound, would be 3,000,000

The flax imported was 1,553,000 cwts., and the average price being 32*s.*, the amount is 2,500,000

If we now add for the hides, timber, copper ores, Swedish iron, block-tin, brimstone, indigo and other dye-stuffs, silk, sugar, gold, silver, quicksilver, and other foreign materials included in this vast amount of manufactures exported only . 2,500,000

We obtain as the total of foreign raw materials exported . £16,500,000

leaving as the value of the products of the labour and land of England exported in ten months £11,900,000

or per annum £14,280,000

being at the rate of 9/6=$2·28 per head, to be applied to the purchase of cotton, sugar, coffee, tea, silks, dying materials, timber, and all other articles of necessity or of luxury required for domestic consumption, grain, potatoes, live animals, and cured provisions alone excepted.

If the reader will now compare this statement with those of other years before given,* he will, I think, have no difficulty in satisfying himself that "the power of purchase" of the people of Great Britain is in a state of rapid diminution, and that to that fact is due the distress existing among her people.

It will be said, however, that she *does* consume much more than this amount. She does, and how she is enabled to do it, I propose now to show. Thus far, however, the accounts of the various periods are made out precisely alike, and answer for the purpose of comparing the present with the past.

It will be seen that the prices of all the articles I have particularized would be low even here. Of the grain, nearly three-fourths are wheat or wheat flour, and the price is but 4*s.* or 88 cents per bushel, delivered in England. The bacon, beef, pork, lard, and butter are at 6¼ cents per pound, also delivered in England. The flax is at seven cents per pound. The wool is at a shilling, and the cotton supposed to be about 5½*d.* per pound. These are prices at which we should not desire to deliver the same commodities at New York or Philadelphia, on their way to Liverpool. Nevertheless, Great Britain obtains all these, and immense quantities of other commodities in addition, *and yet brings us largely in debt on the year's business.* She uses sugar valued at £5,000,000. Large quantities of cotton, silk, hemp, and hides, are consumed at home. Her consumption of tea is 40 millions of pounds. Of timber she consumes a million of loads, and the price of Canada red pine is £3 per load. How does she acquire the power to do all these things?

The cotton that comes from Bombay, as stated above, frequently yields to the shipper at that place but a penny per pound, which will not defray the cost of transportation from the place of production to the place of shipment, leaving nothing whatever for the cost of production, and yet the poor producer pays to the Company heavy taxes for the use of that land, which taxes are remitted to England for the payment of expenses, pensions, dividends, &c.

The sugar from the Mauritius sells for 22*s.* per cwt., or 2¾*d.* per pound, a price that cannot yield the shipper much, if any thing, more than a penny per pound. The producer receives almost nothing. It was shown by the accounts of several large houses, owners of real estate in that island, that for years the estates received nothing whatever. So is it with Canada, and her lumber.

* See page 15.

The charges upon all commodities that pass into England are immense, and they cannot be otherwise. The producers are few, and the consumers are many, and the latter must be supported by the former. Wherever four families must eat and but one raises food, the share that falls to the former must be small, and therefore it is that the farmers and planters of the world are kept so poor.

With every step downward the operation of the system tends to become more severe. A penny taken out of a pound of cotton that sells for a shilling, is a trifle, but a penny out of 3*d.* falls heavily. When cotton is high, it sells rapidly and the charges are few. When the crop is large and it sells slowly, the charges are numerous. So is it with sugar, tobacco, rice, and all other of the products of the earth. With the diminishing power of consumption prices universally have diminished, while the necessity for advances, storage, &c., has increased, giving to the exchanger power to take for himself not only a larger *quantity*, but a larger *proportion* than before. Hence it is that Great Britain is enabled to consume so much while producing so little.

Diminish her power of taxing the planters and farmers of the world, and it will speedily be seen that the power of consumption that even now exists results from the ability to throw upon others the burden that she should bear alone. The *Economist*, a journal not to be suspected of exaggerating the evils of the present state of things, expresses its belief that "the power of purchase" on the part of the British community *is not nearly equal to what it was in* 1845.* That such is the case there can be no doubt, and that the

* This same journal *but a fortnight before* assured its readers that "ever since there had been a reduction of the duties of the sliding scale, and a probability that the corn laws would be abolished, the farmers have steadily improved their cultivation and produced more." If production has increased, how is it that the power of purchase has decreased? If the power of purchase has decreased, how are the people enabled to purchase all this *supposed* increased domestic product, and the enormous quantity that is imported? The power of consumption and that of production go hand in hand with each other, and if "the power of purchase" has diminished, as it unquestionably has, it is because the power of producing things *with which to purchase* has declined.

Much of the diminution in the "power of purchase" is ascribed to the railroad speculation, but it is difficult to see how that should have produced any such effect. Under it much property changed hands, but the actual expenditure was merely the cost of grading and laying the roads, and it cannot be doubted that the labour that has been saved by means of the use of the roads has been quite equal to the amount expended. The price paid for land, and the fees to parliamentary agents, &c., were merely transfers from the pocket of one man to that of another, and could not have impaired the "power of purchase." The railroad speculation produced the roads, and existing as they do, they tend to increase the power of production and consumption. It is necessary, therefore, to look elsewhere for the causes of the state of things now existing in England. They are to be found in the *necessity* for competing with the lowest priced and most worthless labour of the world. The results of that necessity are exhibited in the following facts, which will not only account for the present diminution in "the power of purchase," but relieve us from difficulty in accounting for future diminutions.

"It appears from a parliamentary return, that the holders of farms, who in 1845 were 310,000 over the Emerald Isle, have in 1848 sunk to 108,000. *Two hundred and two thousand cultivators of land* have disappeared in three years, and with them at least half of the capital by means of which the land was made to produce any thing."—*Blackwood's Magazine, December*, 1849. The bank-note circulation of Ireland, which in August, 1846, was £7,500,000, had fallen in August, 1849, to £3,833,000.—*Ibid.* The poor rate of Ireland, which in 1846 was £200,000, has risen to £1,900,000. That of Scotland has risen in three years from £185,000 to £560,000. In Glasgow, anterior to 1846, it was £30,000. In 1848–9, it was £200,000. The number of paupers in 1845–6, was 7,454. In 1847–8, 51,852. The railroad tolls of 1845 averaged £2,640 per mile. In 1849, £1,780.—*Ibid.*

power of purchase must continue to diminish with further diminution in the power of production, is quite certain.

We see that, notwithstanding low prices for grain, the imports are immense, averaging more than nine millions of our bushels per month. Will this continue? In answer, the domestic crop of this year has not failed, nor have there been any reasons why the export from the grain-producing countries of the world should be larger than usual. We are assured that Russia can supply fifty millions of quarters annually, and that much of it is now wasted for want of a market. She has now a market, *and so long as a bushel of wheat will yield to the producer the price of a yard of cotton cloth, he will accept even that rather than waste it.* We are assured that he cannot afford to raise it at any such price, but what else can he do? Deprived of other employment for his time, he must raise food for himself, and with the surplus purchase clothing, even if he have to starve himself to obtain the little that he wears. The error of English writers consists in assuming that there is such a thing as a necessary price. The poor labourer in India, we are assured by this same writer, obtains for his cotton no more than *the mere rent of his land*, leaving nothing for his labour, yet he still cultivates cotton to exchange for the yard of cloth with which he covers his loins.

The people of England first inflicted upon themselves a *necessity* for competing with the "cheap" labour of India in the manufacture of cottons. That produced a *necessity* for competition with the "cheap" labour of Russia in the production of food, the consequences of which are thus described in the recent quarterly report of the Registrar-general:—"The population of England has *suffered, died, and decreased, during the quarter, to a degree* of which there is no example in the present century." Emigration has gone on so rapidly, and so much in advance of immigration, that "England has now less inhabitants by several thousand than were within her shores at midsummer."

The system tends to increase man's *necessities* and to diminish his *power*. It is here shown how enormous was the difference in the prices of cotton in the two periods, and we may now look to see whether the price of cloth and iron changed therewith. From 1840 to 1844, the average price of a piece of gray cotton cloth was 6*s*. 7*d*.; from 1845 to 1849, it was above 6*s*. Here is a reduction of ten per cent. to set off against changes of 40 per cent. The average price of iron in 1845, 1846, and 1847, was 50 per cent. higher than that of the four previous years; and thus, while the cotton was lower than before, the thing which, of all others, the producer of cotton desires to use, was vastly higher. He was steadily giving more and receiving less, and it is no matter of surprise that his power of production diminished and his condition steadily deteriorated.

To this it is due that the power to pay for cotton cloth on the part of the people subjected to the system is steadily diminishing, and that "the consumption cannot be maintained." Nothing, "we are assured, but the stimulus of low prices" will enable "the existing markets" to take off the produce of the machinery of England; and, to secure a supply at low prices, every English writer on the subject is looking for what is called "cheap labour." That of the Zooloos may be had at 10*s*. per month, and Natal is advantageously situated for maintaining "competition with the States."

The "practical deduction pointed to by these facts," and that which most interests the planter, is that there must be "a check to the increase of mills and machinery," until "the increased supply of the raw material" shall bring down the price of cotton to the level of the powers of the consumers, or until "the power of purchase" shall rise to a level with the existing prices. That the latter, among the *unprotected* communities of the world, has

steadily declined, during a long series of years, is obvious, and there exists no reason for supposing that the future will be different from the past. The only remaining mode of "restoring the balance" is that of reducing cotton to the level of *a constantly diminishing "power of purchase."*

That it will be so diminished, unless the planters can determine to help themselves, there can be no doubt. The men who have heretofore raised sugar and coffee are now about to turn their attention to cotton, as likely to be more profitable than either. The people of Jamaica have been forced to abandon coffee, and sugar cannot, as their journals inform us, be any longer profitably cultivated. Why it cannot, the *Economist* informs us.

The same number, from which the above long extract is made, informs us that the sugar market is "drooping," the "expectation of a large additional consumption not having been realized." The consequence is seen in the fact, that the sugar of the distant Isle of France is quoted at 22*s.* 5*d.* per cwt., being two and two-fifth pence per pound, yielding to the shipper, after paying freight and charges, about as much as the cotton above stated to have been shipped from Bombay, to wit, one penny, and to the producer, on his plantation, but little more than is necessary to pay his rent. Under such circumstances, the labour of the people of the Mauritius becomes "cheaper," and may ultimately become as "cheap" as that of the Zooloos.

Thus is it everywhere. The late cotton planter of Alabama is trying sugar, and the sugar planter of Jamaica is determined to try cotton, under an impression that "a sufficient supply is not yet raised to meet the demand which exists for the article." The real cause of difficulty is, that the cotton planter and his neighbours are unable to obtain one-third as much sugar as they would desire to consume, and the sugar planter is unable to obtain one-third as much cloth as he would desire to consume, because the cost of both *in labour* is so greatly enhanced by the necessity for making their exchanges in the distant market of England. Were both determined to make a market on the land for the products of the land, each would obtain in return for the same quantity of labour thrice as much as now; whereas, if they continue to maintain the monopoly system of England, they must obtain even less than now, little as it is. Among the planters of the world, there is perfect harmony of interests, and those of all are to be promoted by the adoption of a system that shall tend to raise the value of labour, thereby enabling the man of Ireland, who now consumes one pound of cotton, to become the man of America, consuming a dozen or twenty pounds.

The object of every effort at maintaining in existence this great monopoly of machinery is that of preventing increase in the value of labour and land throughout the world, that commodities may be had "cheap." How great is the power exercised for this purpose, will readily be seen by all who study the sliding-scale system, by which consumption is diminished with any small advance of price, and the tendency upwards thus counteracted. The existing consumption can be maintained only at the present minimum prices, and the reason why it can only be so maintained is, that "cheap" cotton and "cheap" sugar make the *labour-cost* of cloth and iron so great that the poor cultivator of those "cheap" things cannot afford to purchase either. Dear as is the cloth to the consumers, and little as the cotton has yielded to its producers, the manufacturers have, we are assured, been working at a loss during nearly all those five years, and the profits are set down at only 1½*d.* per pound in 1845, designated by Messrs. Rathbone, in their circular accompanying the diagram given at page 75, as one of "enormous profits to manufacturers." The differences in the prices of both cotton and yarn as here given, from those given by Messrs. R., are sometimes remarkable. The cost of converting a pound of cotton into yarn No. 40, is also remarkable, and must embrace

many allowances for wear and tear, management, &c. A mill in this neighbourhood, at work upon No. 35, converts *into cloth* above a million of pounds, with the labour of 300 persons. The average wages of England are under 30*l.* per head, and this would give 9000*l.*, or about two millions of pence, *for wages of labour* required for converting a million of pounds into cloth, or two pence per pound. Notwithstanding this unceasing succession of losses, there has been, as we are assured, a constant increase of machinery for doing the work, while the whole increase of consumption is trifling. It is difficult to reconcile these statements.

Less difficult is it to ascertain what is the policy of the planter. *It is to break down the monopoly and bring the machinery of England to the cotton fields*, and there it will come whenever the producers of food and cotton shall declare to the world that it is their fixed policy *to extend the consumption of cotton by enabling themselves to supply it cheaply to the consumers*, a work that is to be accomplished by freeing themselves from the control of those who now live, and move, and have their being, by means of standing between the producer and the consumer, impoverishing the one so that he cannot continue to produce, and the other so that he cannot continue to consume.

It cannot fail to strike the reader as singular, that the clever writer of this article supposes that the system which destroys cultivation in India and Brazil has no such effect in this country. He assumes that we produce all we can, whereas we *know* that the great object throughout the South is to limit production, and that the producers are perpetually flying from lands that have been exhausted to seek new ones to be again exhausted, and wasting on the road more labour than would add to the crop hundreds of thousands of bales.

Had the planters eight years since determined that the loom *should* come to the cotton, the crop of this year would exceed three millions, and the price would be higher than it is now with one of two millions; for we should ourselves be consuming much more than a million, the purchasers of which would be found among prosperous makers of iron, who would be producing 1200 or 1500 thousand tons to be applied to the making of roads for the use of prosperous farmers and equally prosperous miners and manufacturers. Increase of price thus produced increases consumption, *and such is the tendency of protection*. Increase of price resulting from short crops tends to diminish consumption, and *such is the tendency of the monopoly system*. It destroys both the power to produce and the power to consume.

GROWTH OF AMERICAN MANUFACTURES, AND THEIR IMPORTANCE TO COTTON GROWERS.—The importations of cotton into Great Britain for a series of years—in two periods of six years previous to, and subsequent to the peace of 1815—were as follow:—

1809	260,711	1815	278,950
1810	372,160	1816	263,820
1811	257,237	1817	350,879
1812	148,958	1818	497,983
1813	77,039	1819	420,617
1814	168,708	1820	426,046
Total	1,284,813		2,237,295
Annual average	214,135		372,882

The quantity taken by American manufacturers was 531,772 for the year ending September 1. 1849. The first importations of cotton into Great Britain from the United States, of any moment, were in 1793—previous to which the supplies for Great Britain were almost exclusively from the West Indies.

Thus it is seen, that since 1820 the demand for American manufactures greatly exceeds the whole English demand in that year. How important to the cotton planter to encourage the home market, and by protection of American industry in all its branches, attract immigrants from Europe to come and labour here, where, in the first place, the Farmer and Planter are *sure to have them* for customers, and where, moreover, their bettered condition *enables them to consume* four times as much of our agricultural produce as if they remained in Europe, even were we to admit that there they would be consumers of it, though certainly to a comparatively limited extent! Thus it is clear, as Mr. Carey contends, that of all importations the *importation of men* is the one most to be desired and encouraged, and the importation of men, as he has demonstrated, always increases with protection and falls off as we withdraw protection. Will the people be for ever blinded by party names?

WHAT NOW NEW ABOUT DAIRIES AND BUTTER-MAKING?

NEWPORT, R. I., *August* 7, 1850.

EXCEPT the subject of slavery, in Congress, we know of few things that have been more discussed than the management of milch cows and dairies, and yet we flatter ourselves that the reader will find something new on both subjects, in this number of the "*Plough, the Loom, and the Anvil*"—read and judge—by J. Towers, Member of the Royal Agricultural Societies of Agriculture and Horticulture, with notes by the EDITOR OF THE "PLOUGH, THE LOOM, AND THE ANVIL."

So important are cleanliness and perfect freedom from taints of every kind, in all the operations of the dairy, that I would urge particular attention to the milk-vessels, and the construction of the milk-house itself. Where they can be afforded, vessels of glass, of wedgwood ware, or of porcelain-lined light metal, are to be preferred, as are also marble shelves, polished-tile flooring, or perhaps the new enamelled slate. Wooden utensils are generally employed; but they retain damp, and thus are apt to acquire and retain a faint musty odour. These contingencies must, above all things, be avoided.

The hours of milking are usually seven in the morning and four in the afternoon; and these, if once adopted, should be punctually observed. Some persons milk three times in the twenty-four hours, if the weather be very warm; but, under any circumstances, the cow or cows ought to be supplied with some kind of food most agreeable to them. Sweet hay is in winter to be preferred, and in spring and summer some green fodder, cut a few hours before, and a little aired to carry off moisture. This food ought to be placed in a small trough, at a height most convenient to the animal, for too much attention cannot be paid to secure her comfort. Violence of any kind ought to be avoided, for to this may be ascribed the obstinacy and other troublesome habits which milkers complain of. If a cow be kindly treated from the first, if she be at all times coaxed and agreeably fed, she will seldom withhold her milk, or be inclined to resist the dairy-maid, or kick over her pail of milk.

In every case where it is the primary object to obtain cream and butter, instead of rearing and fattening the calf, we would recommend that, so soon as possible after the entire abstraction of the "biestings," the calf should not be permitted to suck the mother, but be either brought up by hand or transferred to another or foster mother, because great inconveniences may and do result from habits formed by long indulgence; and it is a fact, however unaccountable it may appear, that when a calf continues to suck, though partially as to its own requirements, the milk *drawn by the hand* is always *deficient in cream*, so much so as to be insufficient to supply much butter.* In milking, the last drop that can be abstracted by tender and judicious "stripping" must be obtained; otherwise, as Dr. Anderson taught us long ago, the loss of the last half pint of milk would implicate that of cream to an extent equal to all the cream contained in eight whole pints of the earlier drawn milk.† The mystery of the phenomenon has at length been solved by a physiological investigation of the udder; and it has been proved that the latter rich milk, when retained, coagulates; and if the error be persisted in, either through indolence or ignorance of consequences, not only a great loss of milk will be

* This is a very curious and important fact, *if* it be a true fact, and the writer is one of the most conspicuous friends and promoters of agricultural improvement in Europe.—*Edit. P. L. & A.*

† This, as is seen, has been physiologically accounted for; yet, especially in Southern cow pens, there is scarcely a cow that is thoroughly *stripped!*—*Edit. P. L. & A*

sustained, but the risk of serious injury to the udder itself incurred. I refer, on this subject, to the "*Book of the Farm*," part ii., page 522.*

At whatever hours (whether twice or thrice a day) *a meal of milk* has been obtained, it should be immediately taken to the dairy, and strained into the dish through the milk sieve. A very little cold water is to be put into the milk-pail, with which it is rinsed; and then the rinsings are passed through the sieve into the body of the milk. This rinsing effects a double object; it cleans the utensils, and somewhat dilutes the milk with a pure *cold* fluid, which also is found to hasten the separation of the cream. In large dairies it would be wise to follow up the indications of nature, and to add a very small quantity of carbonate of soda, in solution. Fresh drawn milk presents a slightly sodaic alkaline reaction; and therefore a grain or two of the crystals of soda dissolved would counteract, so far, the tendency to acidity which the milk evinces.

Creaming.—In any weather cream ought not to remain on the milk beyond three milkings, or from twenty to twenty-two hours—in very hot weather only eighteen hours. Thus, if the cows be milked three times a day, the cream of the previous mid-day's milk should be skimmed off on the following morning, and at mid-day the milk of the previous evening should be creamed; again, it would be most safe to anticipate the operation by one meal, for the following simple but imperative reason—that, "the milk should on no account be allowed to turn sour *before* the cream is taken off, because the cream of sour milk always makes bad butter;" whereas, let sweet cream become ever so sour *after* being taken off *sweet milk*, and no harm will accrue to the butter."

My experience refers chiefly to the management of one cow only; and though for several years we milked only twice a day, and made butter only once a week, we never failed in consequence of the milk becoming sour before the cream was skimmed off.† A cool un-sunned dairy will rarely fail to preserve new milk.

Every time a fresh portion of cream is added to the cream-jar the contents of that vessel should be stirred with a clean stick kept for the purpose, so as to thoroughly blend the whole of its contents. These soon become sour, and on no account should be kept beyond a week, *in cold weather*, before they are churned; otherwise a bitter taste may be acquired. In warm weather the churning should be made *twice a week, however little the quantity of cream may be.*

The heat of the cream is, and has been, the perplexing and vexed question. It can be, however, definitely solved; for, if 62 degrees of Fahrenheit's scale be never exceeded, butter of good quality will be the result, even in hot weather. In winter, however keen the weather, provided that degree in the cream be obtained, the labour of churning will be trifling, for the separation of the butter will assuredly be effected in about thirty minutes. From 60 to 62 degrees furnish the *limits of certainty* at which—the cream being good —the best fresh butter of the season can be obtained; and either of the degrees can be commanded by the judicious use of ice in a cool room during summer, and, in winter, by bringing the body of cream in the jar to the full required heat, by placing it on the hob of a stove, or in a vessel of hot water, the churn itself being also washed with the same till of a corresponding temperature. The facts asserted above have been confirmed by a *steady course of experiments;* and though we ourselves were not, fifteen years ago,

* How often is this admirable work referred to, and yet we have for our stereotyped copy, bound, which we sell at $5, scarcely any demand! while the English copy cannot be imported and sold for less than $25.—*Edit. P. L. & A.*

† This sentence wants clearness—he probably means that he never failed, because he never let the milk get sour before it was skimmed.—*Edit. P. L. & A.*

fully aware of the precision which it is *now* certain can be at command, we were but too frequently perplexed by the results of a too powerful degree of heat after midsummer, and wearied out by the hard labour of churning for six or more hours, without any product, during the depth of a frosty winter.

Having thus alluded to data, which if acted on will, I think, demonstrate that no longer time than thirty to forty minutes should elapse before the perfect separation of butter in the churn, during the coldest weather of winter, and that the *quality* of the butter is not debased by the shortness of the time (even if that be from five to twelve minutes) consumed in the hottest period of summer, provided the heat be kept down to 60 degrees, I proceed to cite a few lines from the "*Book of the Farm,*" on the subject of churning:—

"I have made," says Mr. Stephens, "several experiments with a table churn, in churning cream at different temperatures and with different velocities, but never obtained good butter in less than thirty minutes; and when formed so quickly as in fifteen minutes the butter was soft and frothy. I have heard it alleged that butter of the finest quality cannot be obtained from sweet cream; but I know from experience that butter of the richest quality, flavour, and appearance *can* be made from sweet cream. It has been found that 55 degrees Fahrenheit is the temperature at which the greatest quantity of the finest butter can be obtained, and this is easily attained in a cool apartment early of a summer's morning. The churning should be done slowly at first, until the cream has been completely broken to a uniform mass, when it becomes thinner, and the churning is felt to be easier. After this the motion may be a little increased, and continued until a change is heard in the sound within, and an unequal resistance is felt to be given to the agitators; the butter may then be expected to form soon after this, and the moment it becomes firm, and impedes the agitators, the motion should cease."

The butter should be directly taken from the churn, put into a flat trough slanting in an inclined position, and kneaded by clean hands (*not washed with soap*), pressed and rolled several times, plenty of pure cold water being applied, till every particle of the butter-milk is expelled; and washing must not cease so long as a *shade of milkiness can be discerned.* The butter is then to be patted and moulded into any approved form.

Some persons object to washing with water. They say that a thorough kneading, with a very little of the purest salt, so as entirely to press out the slightest trace of fluid, is the safer mode of proceeding. Experince must decide; but in hot weather the coldest spring water must assuredly tend to confer firmness of texture, and it cannot impart any injurious qualities.*

A few words remain to be said to those especially who keep but one cow. It generally happens that a cow does not yield milk longer than during nine or ten months of the year.† Yet there are many exceptions, and this my own experience has proved; for, in the Isle of Thanet I had a cow which—

* The prejudice against the use of clear cold water has probably arisen from the fact, that the dairy women have not had the patience to expel the water completely from the butter. On many plantations in the Southern country, they depend too, on young people, to bring water, in small quantities at a time, from distant and sometimes very feeble springs, and hence water is not much more plenty, about the house of such places, than milk itself is in some other portions of the country. In this case, as in every other, *consumption is prodigiously increased,* when the supply is at hand and abundant.—*Edit. P. L. & A.*

† They rarely go so long—in many parts of the country, not more than five or six—and for this reason, because when first brought to the pail, they are ruined by not being carefully and cleanly milked to the last drop. Half the cows in the country are ruined in the milking, and the other half by want of kind treatment and good feeding. Many people think, or act as if they thought, that a cow will give milk as a drum will give music, by beating and thumping, without feeding. Hence the value of the essay in our last, translated from the French by F. G. Skinner, on the spaying of cows and the merciful use of chloroform in the process: but is there not danger in that case, that the cow will afterwards incline

after calving within twelve hours of her coming to me—failed to breed again; her milk remained good and abundant for a very long period; and, to my own great loss and detriment, I was persuaded to fat her on oil-cake for the butcher. I could never replace this cow. Mr. Stephens adduces a variety of these anomalous instances; one in which a cow belonging to Mr. Ball, near Hampstead, continued to yield milk for seven years subsequent to her first and only calf. If (I can assert) a barren cow prove a good and steady milker, she is invaluable; and a wise economist will be very unwilling to change a certainty for an animal which, under ordinary conditions, must involve a great deal of trouble and anxiety.

A BIG SHEEP—LATE GREAT EXHIBITION IN ENGLAND.

If we had room, we would like for once to give a full account of the late great fair of the Royal Agricultural Society, in England, and of the DINNER and dinner speeches, particularly those by Mr. Lawrence and Mr. Rives, and particularly too the whole list, an account of the display of machinery and implements. An English paper, which contains a very full account of the exhibition, represents Mr. Lawrence's speech as "the great point" in the whole affair of the dinner exercises.

Mr. Rives is known to be a practical farmer, on a large scale, fond of the pursuit, and familiar with its literature as well as with its practice a-field.

It might be no disadvantage to judges at American cattle shows to read the very minute and very critical observations made in the English agricultural papers, by committees and others, on every department of the show, evincing a degree of minute and practical familiarity, which can only be the fruit of a life of experience and close study—such as makes the mariner familiar with the smallest details of his ship and profession.

Remarking on all the classes of "pigs," as they are invariably called, the reviewers of the show say, for example :—

"No. 525, one year and three months, is one of the finest animals in the yard. His sides and top, from ear to tail, are perfectly straight—nothing equal to them in the yard. He has, however, a slight deficiency in quality to the touch; his head is scarcely correct, and is not quite fine enough to compete for small breed with the full blood Leicester. His girth is sixty inches, and length fifty-seven inches. Mr. Maws' (Tetley Crowle Lincoln) boar (510) is an astonishing animal. He has too much hair for a competition of this sort, and is rather too round in the back and strong in the bone; otherwise, so far

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too much to fat, and diminish proportionably in her lactiferous secretions? We know that emasculated fox-hound bitches are apt to become too fat for a hard sharp run.

After all, and on considerable and close observation, we can aver that, for the peculiarly rich and fine flavour that gives excellence to butter, there is none equal to that which is found in the Philadelphia market—Baltimore is, or was, No. 2—but throughout the whole country, at leat including Washington and east of it, there has within our personal experience been great improvement in this article, so much so that any hotel keeper who gives bad butter to his guests deserves to be well cobbed. For ourselves, we hold that there is no such thing as middling, passable butter—and yet more, let us never hear of "*cooking butter!*" That which is not fit to come to the table, pure, clean, neatly served up, and free from all bad odour or taste, ought to be put on the cart-wheels, or in the slush-tub, and nowhere else. Any man *may* do without butter if good, for any cause, cannot be had; but *bad butter* should not be allowed to pass muster, even in a penitentiary.

One of these days, when we can get time (will that ever come), our firm purpose is to go out on a visit to some of the good dairies near Philadelphia, and there ask leave to help the dairymaid to skim her cream and churn her butter, and if we don't get to the bottom of all her secrets, it shall be because, like her favourite cow with her milk, she secretes and holds something back that ought to come to light. In this effort to get the best information on a most interesting topic, we shall but humbly imitate the example of Mr. Jefferson, who, when minister to France, went to Parma, and there watched the movements of the dairywomen from the rising of the sun to the going down thereof, and from his notes gave us the best essay extant on the manufacture of the famous *Parmesan cheese*.

P. S.—Since reading the proof of the above, a lady, practically conversant with the mode of managing cream and making butter in Chester county, Pennsylvania, has promised to give us a letter on the subject.—*Edit. P. L. & A.*

as regards plumpness of form, and perfect evenness of outline, he excels everything in the yard. Rotundity is his characteristic, to a higher degree than any other animal. His girth is sixty nine inches, and length fifty-seven, being twelve inches more in girth than the prize animal, and same girth as first prize *large* breed. Mr. Savery's boar (518) is deficient in his forerib, to an extent that disqualifies him altogether in a competition of this sort. Two boars of Mr. Fisher Hobbs', Nos. 510 and 511, are commended. No. 508 is a neat pig, but small and light in the fore-quarter, and the head is not broad enough."

Of the rams the same writer says:—

"Mr. Garne's ram, 467, forty months old, which obtained the prize of 20*l.*, $100, is very big, and beautiful in every point, having an especially good neck. The prize of 10*l.* was awarded to 471, bred by Mr. Lane, of Eastington, Gloucestershire. It is fifty-two months old, a most extraordinary animal, of immense frame, very broad, full, and deep chest, colossal neck, great overhanging cushion; weighing probably 80 *lbs. per qr.*, yet having a very small head and marvellously thin bone."

There hung in the larder of the U. S. Hotel, Philadelphia, for some weeks last winter (brought over in a steamer, and sent by his friend Mr. Homan, of Boston, to Mr. Mitchell) a quarter of Leicester mutton that weighed sixty-eight pounds.

ON BREEDING HORSES.—There is nothing reared or bred by the farmer, which will more certainly command a good price at all times than a *first-rate horse;* yet how few of them do we see out of the great number that are bred and fed? One reason is the little attention paid comparatively to the *qualities of the mare*, even yet more than the foolish pampered, phlethoric condition of the stallion.

The reviewer of the great exhibition, already referred to, on the subject of horses says:

"We now come to the other sex, being Class IV., for mares and foals, for agricultural purposes, and here, as well as in the next class, the Suffolks reign supreme, taking both first and second prizes; and here we may well pause for a moment, to inquire how it is that the Suffolks are so successful in obtaining prizes at these shows—a question which we feel no difficulty in answering, inasmuch as the class we are now noticing affords a striking proof of the justness of the explanation we have to offer, viz: that it is by the *most rigid attention to the excellence of their mares*, that the Suffolk breeders are enabled to rear such very superior horses as they succeed in producing. Any man, by the payment of the requisite fee, can avail himself of a first-rate horse; but it requires 50 or 100 times the amount of such fee to procure a mare equal to such horse, in all respects; (100*l.* $500 was the price asked for No 282, the mare to which the first prize was awarded, and 50*l.* for the foal.) There is no peculiar virtue in the colour of the Suffolks; indeed, we would prefer a dark-bay or brown; but it is that animals of this peculiar colour have received very great attention, and in consequence have been considerably improved."

Some days since, on a flying visit to Baltimore, we saw in Mr. Dukehart's stable, a very nice pair of large ponies, bred and reared on the beautiful estate of our lamented friend, Col. Emory, by his son; one secret of whose thriving is, that he breeds horses for use or sale, rather than for the precarious profits and expensive amusements of the turf. These colts, being still in pulleys, we could not so well judge of their form and points; enough, however, could be seen to show that Maryland farmers have no occasion to send away four or five hundred bushels of wheat into New York or New Jersey, for what they can as well raise in their own State for $100—to say nothing of the amusement, and the personal and just pride and gratification, of raising *their own horses*. When agricultural societies do give premiums for matched or single geldings, it should be to the farmer who breeds them (*within the State*), and not to the chance owner, whose only merit in the case sometimes lies in the length of his purse. Horses are *very expensive machines at best*, in regard to which too much caution cannot be exercised in the bestowment of premiums. In New England they drive very fast horses, because time becomes very precious where the loom and the anvil are very close to the plough, but there they very rarely give premiums to horses of any kind.

HOW POPULATION ENGAGED IN OTHER PURSUITS GIVES VALUE TO THE LAND AND LABOUR OF THE CULTIVATORS OF THE SOIL.

ASTOR HOUSE, N. Y., *9th August*, 1850.

IN New York, whortleberries or huckleberries (which, where we went to school, were left for the *birds*, or to rot on the bush), are worth more than the finest grapes (such as sell in Boston for seventy-five cents a pound) would be at a distance from the towns, and where all are engaged at the plough. Here, in this wonderful establishment, the *Astor House*, New York, they are now using one and a half bushels a-day of whortleberries, and from 1000 to 1200 eggs a-day, and from 400 to 500 quarts of milk a-day, and from 500 to 1000 pounds of beef. The freight on berries alone, from New Jersey to New York, it is said, has been $100,000 a year.

Thus it is that population makes the bush to yield its berries; the hen to lay her eggs, and the cow to yield her milk: and what thickens population? *diversity of pursuit*. By the by, people in the country, of whose ways and habits we profess to know something, pass by, every day, things that when they come to live in town, they regard as luxuries. What *farmer* sends to the woods, or fields and fences, abounding in whortleberries and blackberries, in a regular way to have them on his dinner table, sprinkled over with grated loaf sugar, as a pleasant and wholesome dessert, perfectly within his reach every day? We apprehend very few, where these things most abound, and where cultivated fruits and vegetables are most neglected. Yet it would amaze him and "do him good," to see how these simple wholesome wild berries are devoured in the towns, at the hotel tables, by wealthy and fashionable people.

Apropos of blackberries—We wish some farmer would, now that they are in season, mark such bushes as bear the largest, and sweetest, and freest from seed; and transplant, and prune, and cultivate, and see if they cannot be as much improved as the apple and the grape have been by cultivation. To such perfection have the Chinese carried the art of improvement in this way that they have variegated the *common bamboo* into more than an hundred kinds—having even succeeded in rearing a *black variety*, much esteemed in the gardens of the wealthy. Ah! who has not occasion to realize the expression of Mr. Cooke, Earl of Leicester, when he said that agriculture was "the most beautiful of all sciences!" But it never was, and never will be carried to great perfection, in a country sparsely populated, and whose home industry and commerce are not encouraged.

ECONOMY OF TIME. STRENGTH OF OXEN.—Returning some days since, on foot, up the hill from bathing before breakfast, at Newport, we fell in, cheek by jowl, with a teamster and his yoke of oxen with a load of hay for which he was to receive $15 per ton. Well, my friend, *how much can* your oxen haul at a load up this hill? "Well, I don't know, but I guess they can haul two ton at a heft." Two ton with one yoke, or two, in the ordinary way, of *stun*, instead of three yoke as in the planting States creeping along, with one hogshead of tobacco, weighing 1000!—and why is it so? Why, because employments are so diversified among these Yankees, that a man has constant demand of some kind for his labour; and both his labour and his time, and his food, and the food of his animals are all too valuable and precious to be wasted in the use of slow, ill contrived, incompetent, animate or inanimate machinery! Hence it is that where employment is diversified, and population concentrated, all things are improved, and everything made to work together to the greatest advantage. Thriving people can't afford to throw away time on bad machinery.

From the American Farmer.

THE VALLEY AGRICULTURAL SOCIETY OF VIRGINIA.

Charlestown, Jefferson Co., Va., *May* 20, 1850.

To the Editor of the American Farmer:—

Sir:—On Monday, May 20, there was a meeting of the Valley Agricultural Society of Virginia, embracing the fine counties of Jefferson, Clarke, Frederick and Berkley. The Society was organized by the election of the following officers:

President—Lewis W. Washington, of Jefferson.

Vice-Presidents—Hon. Richard Barton, of Frederick; Hon. C. J. Faulkner, of Berkley; A. R. Boteler, Esq., of Jefferson; T. F. Nelson, Esq., of Clarke.

Secretary—R. W. Baylor, Esq.

Corresponding Secretary—Dr. R. Blackburn.

Treasurer.—Andrew Kennedy, Esq.

Board of Managers—Jas. D. Gibson, Esq., of Jefferson; Thomas C. Pendleton, Esq., of Clarke; Martin Eichelberger, Esq., of Jefferson; Francis Peters, Esq., of Berkley; John Walls, Esq., of Frederick.

This looks all very well on paper, but Virginians need not expect their resources to be developed, and their agriculture to prosper, as long as they are content to import cloth and iron from England; leaving inexhaustible beds of coal and iron sleeping where they have slept for ages, in the bowels of their own State, and their mountain pastures unstocked with fine-wooled sheep, that would yield them hundreds of thousands of dollars—and while too, they are content to waste as much on bad roads, with imperfect machinery of transportation, as would build them mills and forges, making a market on the land for the produce of the land—all the while crying free trade! free trade!

As to their Society, as we have said, the material is good, the men are first rate—let us see what they *will do*. But have they not had societies for half a century? Have they not been coming all that time, and departing, like the ghosts in Hamlet? and does the valley average as much of wheat throughout, per acre, as it did thirty years ago? We, who travelled through it then, a keen observer, should say not! And by how much less now than then? What do you say, Col. Allen? or you, Mr. Washington? or you, Mr. Barton? Just thirty years ago the Fredericksburgh Agricultural Society said, in a memorial to Congress:—"To buy as cheap as you can, no matter where, and to sell as dear, is the maxim which should regulate the commerce of individuals and nations." And where is Virginia now? In what has she advanced—what is it that nations of *starving, famished people cannot* make cheaper than we?

The best free trade we can maintain with such a people, is to give such encouragement to labour, as will tempt them to come and settle among us. Then they will *surely* be good and able customers, not only to the farmer and planter but to the hatter, and shoemaker, and weaver, and saddler, and carpenter, and bricklayer, each to the other, and all to the farmer. If the people of Virginia had begun to act upon this principle, even as late as 1820, she would now have two millions of population—all her valleys would be threaded with railroads; and steamboats and tobacco ships would be bringing thousands of immigrants from Europe directly into her rivers, to work up her wool, her iron, her coal, her timber, and her leather; and to eat on the spot her flour and her beef, her mutton and her potatoes, from which such heavy deductions are now made for the cost of transportation, and commissions, going over bad roads to distant markets. But, says the political partisan, "let us sell in the dearest and buy in the cheapest markets, wherever to be found;" and to this the farmers say—*Amen! amen! so be it!*

OAT HAY.

COHOES, N. Y., *July 29th*, 1850.

IT is now, we believe, generally admitted, that both wheat and grass are the better for being harvested before they are dead ripe; and that with reference not only to their nutritive qualities, but to the saving to be otherwise accomplished by early cutting. There is, however, probably no crop in regard to which early cutting may be so economically practised, as in the case of *oats;* especially to the extent that they are to be used on the farm, as food for domestic animals. In that case, we are satisfied, by various observations and reflection, and more especially by an essay in the "Quarterly Journal of the Royal Agricultural Society of England," that it would be a very considerable saving to cut the oat crop, when the grain is fully formed, even before, or at all events as soon as it is dried of its milk.

Doctor Voelcker, Professor of Chemistry in the great Agricultural School at Cirencester, gives the details of careful chemical experiments, which go to show distinctly that the relative proportion of nutritive matter was larger in oats cut green than in oats cut as soon as quite ripe, and he publishes extracts from letters to prove that the deductions of science are fully corroborated by the experience of practical men.

Does it not, indeed, stand to reason that the sooner the straw is turned into hay, after it has performed its office of conducting to the grain the elements that impart to it its nourishing qualities, the more nutritious will be the straw itself, and the more soluble its condition for the purposes of digestion, and for making better manure? All these considerations derive additional force from the fact that oats are very often, and perhaps ought always to be fed along with their own straw; being first cut up altogether and mingled by the cutting-box. On the whole, there would seem to be every inducement, and no good objection to cutting oats, at least for the use of the farm, as we now cut clover or timothy hay, before the seeds are dead ripe, and the straw entirely desiccated. Indeed, were it not for the increase in the cost of transportation caused by the increase of bulk, there is no palpable reason why oats should not be sold thus, cut up, in the common market, as food for town horses. The case is different in Scotland, and in all countries where oats make an important element in the diet of the people—but even for flour, it is asserted that wheat is the better for not being dead ripe. Might not the proportion of the grain contained in a given bulk of cut oats be measured by the *weight* of a given quantity, to be ascertained by experiment? The author of the essay referred to, quotes from a letter of Mr. James Walker, who says:

"My own experience at the Cape of Good Hope (though confined to young horses) leads me to assert, that oats thus reaped and cut into chaff half inch to inch length, will go one-fourth further than the same when allowed to ripen and used in the ordinary way. I need hardly allude to the evident saving of labour—saving of there being no risk of the best grain shaking out and being lost, the different appearance the manure heap would have, &c."

A Mr. Stewart's experience, too, was in perfect accordance with the foregoing. He says that his horses preferred this fodder to every other kind of hay. In truth, is there any good reason why such distinction should be made between other grasses and oats, in their management? Is it justified by any essential difference in their nature and (except as already excepted) economical uses? or is the practice founded, like many others, on early impressions and the force of habit?

It was our purpose to have called attention to this subject at an earlier

day, while the crop was growing, in hopes that Farmer PROGRESS, more enterprising than his neighbour HOLDBACK, and not content to move on forever in the same old jog-trot, would try an acre, for his own satisfaction. For ourselves, be it confessed, the subject borrows its attraction from its novelty, *combined with its apparent reasonableness.* Time is precious, and seems the more so as we grow older. Let us, therefore, employ it in bestowing our reflections and thoughts not on what is old, stale, and unprofitable, as a tale twice told; but on things new, and such as promise to be useful as well as new.

In Europe, as we lean from Skinner's edition of "*Stephens' Book of the Farm,*" there are a much greater variety of oats cultivated than is generally known in this country. In the museum of the Highland Agricultural Society of Scotland, there are deposited fifty-four varieties. The natural classification is obvious; one kind has its panicles spreading and equal on both sides, and tapering towards the top of the spike in a conical form; the other has its panicles shortened, nearly of equal length, and all on the same side of the *rachis*—that is, the stem running through the head of the grain. The figures here represent both kinds, *a* showing the first and *b* the second;

a is the prolific potato oat, which is beardless, commonly cultivated in Scotland for the sake of its *meal,* and *b* is the white Tartarian oat, which is bearded, and used more exclusively for animal food. The natural classification by the grain consists also of two forms; the one a round, plump grain, and an elongated, thin grain, having a tendency to show awns, as at *b*;

the *a* kind being cultivated on the best lands in the low country, the other on poorer soils and in high districts. The first is tender, and liable to

shake with the wind; the other is hardy, and able to resist the tempest. The former is cultivated chiefly for human food, yielding meal largely, the latter being raised chiefly for the food of horses. The straw of the former kind is strong and inclined to reediness, and of the latter, is fine, pliable, and makes an excellent dry fodder for cattle and horses, there being a good deal of saccharine matter in the joints; the former is considered late in coming to maturity, the latter early, and is consequently so designated.

Scotland is the great country for oats, the crop giving usually from forty to seventy-five bushels, the weight varying from thirty-six to forty-eight pounds per bushel. High, elevated localities give the best oats as well as the best potatoes. Alleghany County, Maryland, is famous for both. In Montgomery, the black oat is said to be more prolific.

In Scotland, children of all ranks are brought up on porridge—*Scottice* parritch—verifying Burns' assertion :—

"The halesome parritch, chief o' Scotland's food."

Oats are said to give even meal when they yield half their weight in meal.

We find no mention made of oats in Scripture, says Phillips, which expressly states that Solomon's horses and dromedaries were fed with barley. But they must have been known in Rome at the time of the Christian era, as that profligate tyrant, Caligula, fed Incitatus, his favourite horse, on gilded oats, from a golden cup.

AN "ENTIRELY NEW VARIETY" OF WHEAT?

Maple Hill, Geneva, N. Y., *July 30th*, 1850.

Messrs. J. S. Skinner and Son, Philadelphia.

Gents.—I have this day taken the liberty of depositing at the express office a small package, directed to your address, containing a sample of wheat of an entirely new variety in this section of the country.

I accidentally obtained a few berries five years ago, and have now the product of four and a half acres, or thereabouts, standing in stacks on the ground "as thick as leaves in Vallambrosa."

The most noted farmers in this vicinity estimate the yield at from 40 to 50 bushels per acre.

From the fact of its ripening some ten days later than the ordinary varieties of wheat in this climate, I am led to suppose that it would be well adapted to the climate of your State.

If you find it to be a new variety, and wish a more detailed statement of its *rise and progress*, I shall be pleased to send you all the information, which, however, is very scanty, I am in the possession of.

Respectfully your obedient servant,
PAUL MITCHELL.

We have disposed of the sample of wheat in a way most promising to insure it a fair trial and a "true presentment" of its qualities as they may appear, in a wheat district of Maryland. We shall be glad to have the information, only premising that we hope it did not come "out *of a mummy*!" We shall be glad, too, to learn the yield by actual measurement.—*Ed. P. L. & A.*

HOW TO HAVE CIDER EQUAL TO CHAMPAGNE.

WASHINGTON, *July* 15, 1850.

To J. S. SKINNER ESQ., *Editor of "The Plough, Loom, and Anvil."*

MY DEAR SIR :—I have this day received your very kind letter, addressed to me under date of the 12th instant, in which you remark, "how few, except you, can say, that they have lived to see, and to have personal intercourse with all our Presidents: and with nearly all of them friendly and confidential relations."—In the years 1774–75, looking on, tho' then a boy, the movements which brought about our Revolution, I took a deep interest in all the trying scenes which occurred during its progress, to the period of its glorious issue. This and subsequent circumstances afforded me opportunities to form an intimate acquaintance with, and on all occasions to be most kindly received by, the distinguished public men of whom you speak. Mr. Monroe was a native of my county, and our near and highly valued neighbour and friend, until he entered the revolutionary army. At the end of that war he became public property, and he so remained nearly as long as he lived. And when our recently deceased and cordially lamented Z. Taylor became Major-General, and finally President of the United States, I confess I feel gratified at the fact, that my humble, though zealous aid was used to obtain for him his first appointment as a lieutenant in the army of the United States. All this awakens in me the recollection of highly interesting reminiscences, on which I could largely comment, but I forbear to indulge in them, or you might conclude that I have adopted the prevailing fashion in *high places*, which is *all talk* and *no cider*, a fashion which the old cider-drinkers in a colony called Choptank (the name of a creek in Virginia, on the river Potomac) denounced. To escape from this, I will comply with your request to be informed, how I *make* and *manage cider*, of which, you say, you have heard very favourable accounts. Before I do this, I will promise, that there is scarcely a more prevailing mistake than that which assumes, that *good cider* can be made from almost every kind and variety of apple. As well might it be assumed, that good wine might be made from every kind and variety of grape; which all experience has shown to be impracticable. By an unseen and unknown economy in the formation of fruits, each is adapted to an appropriate purpose. That such is the destiny of the apple, my experience, during more than seventy years past, attests. I have never seen cider of the *best* quality, except made from the *Virginia crab-apple*, of which there are several varieties; all equally good. The much celebrated Newark and other northern cider, though an acceptable beverage, cannot compare with the crab-cider properly managed. This I state from a comparison of my cider, in the City of Washington, with a specimen of the best from Newark. In order, then, to make first-rate cider, I assume that the *Virginia crab-apple* must be adopted, and managed as follows:—About the middle of September in each year, all the apples which, from any cause, have fallen off the trees, are to be carefully taken away, not leaving one. These may at once be ground, and will produce cider for present use, and for vinegar. During the last week in October the apples are to be taken from the trees, also all the sound apples which may have fallen off, and placed in the apple-house. During the first week in December, by which time nearly all the water material in the apple will have evaporated, and the apple become mellow and easy to crush, they are to be well ground by an apple-mill, being careful to throw aside all unsound apples. From the mill they are to be thrown directly into the press-basket, placed on a platform, having a deep channel or gutter cut around the press-basket, on one side of which gutter a channel is formed through which

the expressed juice is to pass from the platform, into a large, dry and clean vessel. To intercept from passing into that vessel the pulp, seeds, and gross sediment of the crushed apples, a Dutch blanket twice doubled is placed under the gutter through which the juice flows into the aforesaid vessel; and from which, the juice thus freed from all extraneous matter, is put into dry and perfectly clean rum hogsheads or wine pipes, the bungs of which are to be immediately closed, and to prevent the access of air into the vessels, a batch of wet clay is to be placed over the bung. In that condition the cider is to remain in a cellar three weeks, by which time such sediment as may have passed through the blankets will have settled at the bottom of the cask. In order not to disturb it, the cask is broached about four inches below the upper chime of the cask, and the cider drawn is put into a perfectly dry and clean quarter cask. When the cider ceases to flow through the vent thus made, a new one is to be made about from four to six inches below it; and so on until they arrive at four inches above the lower chime of the cask, thus leaving the sediment quiet. The quarter casks into which the cider thus drawn is put, must not be filled up to the bung hole by about two inches and a-half; in order to leave room for the expansion of the cider, when on the occurrence of warm weather it undergoes the vinous fermentation. These casks being thus filled, are at once closed at the bung in the manner stated above, so as to exclude air, the certain cause of the deterioration of the juice of all fruit. In this condition the cider remains until the last week in May, or the first week in June, when it is put into bottles perfectly dry and clean, which are to be securely corked, the corks kept in place by twine and dipped in melted rosin or sealing-wax. That done, the bottles are placed on the cellar floor on their *sides*, not on their *ends*, in layers of wet sand; the sand to be watered once in two weeks during hot weather; this is to preserve the bottles from rupture by the expansion, by heat, of the fixed air in the cider. Cider thus made and managed is the pure juice of the apple; and all, without exception, who have tasted it, pronounce it equal, if not more pleasant than the best champagne, of which, to say the least, it is a worthy representative and substitute.

You ask me, "Was not the practice of planting and cultivating orchards, and culinary, and flower gardens more general formerly, within your recollection, than now?" During many years of my early life, all those matters were more extensively, and much more effectually attended to in Virginia, my native State and continual residence, than they are now, and during many past years. The time was, when *all Virginia east of the mountains abounded in orchards.* Where once was to be seen more than a hundred acres covered with fine productive peach trees, the same ground is now covered with pine and other trees of second growth. The cause of the annihilation of our orchards, was the introduction of whisky as a substitute for peach and apple brandy; of which many planters made from one thousand to three thousand gallons annually, besides tobacco, corn, wheat, &c. The peach brandy sold for one dollar, and the apple at seventy-five cents a gallon. But when whisky appeared, out of which an Irishman boasted, as a high eulogy on America, that he could get drunk for nine-pence, away went our orchards, and their brandy. As to the culture of culinary and flower gardens, as a general matter, we are far behind those operations in my early times. A goodly number of exotic shrubs and flowers have been added to the old stock. But the arrangement, and especially the cultivation of our culinary and flower gardens is very much inferior to what they once were. Wishing for you success in your zealous and untiring efforts to promote the interest of the Plough, Loom, and Anvil, I am, dear sir, with sincere respect and regard, your friend,

JOHN TALIAFERRO.

A YOUNG FARMER'S EXPERIENCE.

Mr. Edward Reynolds, a genuine scion from a good old stock in Calvert county, Maryland, while still a commission merchant in Baltimore, has had the good luck and the good taste to secure some good *terra firma* in his *native county*, in which, we believe ourselves to have been the first to proclaim, there is as much, or more naturally good land, in proportion to the whole area, than in most, if not in any county in the State.

We are glad to see by a communication of his in the old "*American Farmer*," that agriculture is with him not a mere horse-mill business, ever going round and round, in the same track, without thought or inquiry. He wisely and honourably makes its pursuit a matter of intellectual as well as physical exercise. We never see a name that belonged to one of the old families of "that ilk" that we are not transported back in imagination to a period of remembrance very early in life, just at that epoch when *party spirit*, like the famous poison tree of Java, raised its hideous crest and diffused its poison, alienating some of the oldest and best friends, and embittering, even as we fear to the present day, the cup of social enjoyment. Yes! it was but last night, restless and wakeful from sheer over-work and exhaustion, that we asked ourselves —alas! where are the Grays, and the Wilkinsons, the Reynolds' and the Chews, the Kents, the Blakes, and the Dares—the Taneys, the Dukes, the Brookes, the Smiths, and the Mackalls, and the Morsells: well-bred and fair minded men and women—models of either sex for all of nobility that plain dealing, and truth, and honour, and genuine hospitality could confer? Who and what are their successors? what the condition of society now, in a county where then, men so lived that, as they ceased to live they might say with the lamented Taylor, "I am prepared—I have endeavoured to do my duty;" or with the great Apostle,

> Thus sainted Paul, "Oh death," exulting cries,
> "Where is thy sting? Oh, grave, thy victories?"

True, the pious may answer—old Cato* is gone—the grave which "proclaims the sacred dogma of equality" has raised him to a level with his betters—followed by that wicked sinner, old "Sam Jack;"† for so many years the sole officiating priest at the shrine of the giddy and light-hearted goddess Terpsichore —but that is not the question—they have indeed gone the way of all flesh, and the Apostle Peter says "all flesh is as grass. The grass withereth, and the flower thereof passeth away." But the real question is, have her schools, her lands, her cultivation, her churches, her religion, her *morals* been improved during the past forty years—that we, one of the humblest of her stray children, have been labouring elsewhere, doing the little we could for society, and alas! but little for ourselves. Are the people less envious and covetous than formerly? Do they live in stronger abhorrence of ignorance, and drunkenness,

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* Mournful and kindly reference is here intended to a gray-headed old servant of that name, of good humour in his way, belonging to the editor's father. Cato, after corn was gathered and husked, and the time for social interchanges of innocent fun and frolic commenced, was devoted with his fiddle for the residue of the season, to himself and the neighbourhood for miles around.

No dances could be carried on without "old Cato"—whether to "hey" or "chassé," to "change" or "turn your partner"—Cato's word was the law. Sometimes his fiddle had but three strings—it might even be but two—still the spirit was up and the dance went forward. Is there *any* one left, except one or two dear old ladies, that we wot of, who can remember these good old times?

† Mr. Jack, then commonly, and here not irreverently called "Sam Jack," for many years held undisputed sway as the only dancing master in the county. It was yielded to him as by common consent, as his Province; and no knight of the bow dared to invade it. Ah! let us respect the memory even of such men, for they acted well their part; and though destiny made it an humble one, who can do more than that? If the time has been, we trust it never will be again, that we would willingly withhold the tribute of a kind word even from a dog that plays his part truly and faithfully in the great drama of life.

and gambling, and backbiting, and low vices? Let us trust that all has gone on for the better—we only ask for information.

The reader will excuse us, it's our own native county.

"Breathes there the man with soul so dead,
Who never to himself hath said,
This is my own, my native land?"

To return to Mr. Reynolds' experience—he says:

ACTION OF GUANO, BONES, POUDRETTE, &c.

BALTIMORE, *July 17th*, 1850.

To the Editor of "The American Farmer."

SIR:—I promised, some time past, to give you in writing the result of my experiments with the different sorts of "bought manures."

You are aware of the fact, that nearly all of the "bought manures," (as they are termed,) are looked upon by farmers *very dubiously;* and I can assure you that it is well, as it regards many of these manures (so called at least), that this opinion of them does obtain among farmers, else many of us would have paid dearer for our "whistles" than would have been desired. Already there are some "burnt infants" among us: hence the skepticism of farmers, as to there being really any "new," and at the same time "true thing under the Sun."

Since 1843, I have been trying to find out which is the best of all these "new things," and have now, after having been very considerably "humbugged," settled down upon bones and guano—although even the last named, in a very dry year, has also "cheated" me; but this is by no means its character, as I am constrained to admit, that after having tried it on all sorts of soil, and perhaps as long, if not longer, than any other person in the State, it is my opinion that when properly applied, with an average fair season, it is a *very powerful* fertilizer. My mode of using it is, when applied on *tobacco*, to mix one and a half bushel of the Peruvian (which is ordinarily 100 lbs.) with one bushel rich earth, and one bushel plaster, which admits about the one-fifth part of a gill of the mixture to each hill for every 5000 hills—and putting it in the centre of the check before being scraped—so that when the hill is made, it lies beneath the plant. On *wheat*, I apply three bushels of Peruvian guano, equal to 200 lbs., mixed with one bushel plaster, and one bushel rich earth to the acre, sowing on the surface and ploughing it in as soon and as deep as possible, after it is sowed. The past spring I have put 300 lbs. to the acre, on thirty acres *corn*—being half of a field, on a farm in Calvert, mixing with it the same quantity of rich earth and plaster, and sowing on the surface, ploughing in at once very deep, using the cultivator only in working it afterwards.

I do not intend to use it at all with *corn* hereafter, and not because I do not think it also a good fertilizer with this crop (as my corn on my Calvert farm, upon which it has been used, now shows *very fair*), but only because it has never failed to pay me *threefold* better on wheat, than on anything else. In order to test its virtue, it is essentially necessary to plough it in deeply, and stir it as little as possible afterwards.

Bones.—Of these I have used both *ground* and *crushed*, and always to advantage at ten to twenty bushels per acre; bought from manufacturers here, and agents of houses in New York; but am using the crushed, dissolved by oil of vitriol, as prepared by myself on my farm in Calvert in the following way: The bones (which we buy in the neighbourhood at fifty cents per 112 lbs.), after breaking them with a small sledge hammer on an old anvil, we put at the rate of three bushels in one-half of a hogshead, and apply to that quantity seventy-five pounds oil of vitriol, filling up the half hogshead to within eight inches of the top with water, letting them remain (but stir the contents occasionally with a stick) say two to five weeks, according to the quality and strength of the vitriol; then start the contents of the half hogshead into a large iron kettle, apply a slight fire, and the whole contents will, in less than an hour, be reduced to a perfect jelly. We use two half hogsheads at once, to prepare it expeditiously.

We then mix the contents of each kettle with a horse cart load of rich earth, or ashes, throwing in a half barrel plaster, mix or compost it handsomely, and use at pleasure, on an acre of land with any crop you choose, and you will have permanently improved two acres at the following cost, viz:

Bones,	$1 50
Vitriol,	3 75
Plaster	1 12—$6 37, or $3 18

per acre, and this may be repeated so as with proper attention, as much lasting improvement may be made each year, as many farmers derive from their barn-yards. Bones in any form never fail to show their striking effects on clover and other grasses. But either bones or guano will scarcely ever fail to produce a better crop of clover, which, with the in-

creased quantity of straw (particularly when guano is used) will enable and encourage the saving of larger quantities of barn-yard manure, and which must inevitably cause a lasting improvement.

Poudrette, I have used also to good advantage, particularly on clay lands, at the rate of six to eight barrels per acre (Mr. Baynes of this city prepares the best article, I think, ever made, certainly superior to any I ever used). It is a first-rate top dressing on young clover in spring, at two to three barrels per acre. This article has been prepared so badly heretofore, that a great quantity of it was really worthless—Mr. Baynes will, I hope, raise its character.

"*Agricultural Salts*," "*Generators*," and "*Regenerators*."—Of these, what shall I say—I have tried them on corn, wheat, oats, clover, and tobacco—but have yet to discover that they ever generated anything for me, though I have heard them sometimes well spoken of.

I will bring this long article to a close by stating, that although I am now using large quantities of "bought manures," and have done so since 1843, yet every year's experience only increases my confidence in the barn-yard system, which I never in the least abandoned; and am now making greater efforts than ever to increase my quantity of barn yard manures annually.

I must not overlook "*Ashes* and *Lime*;" these, however, speak for themselves—they want no trumpeter. If you wish grass and clover, and can haul these, buy them (at a fair price) before everything else; my farms are too far from *tide water* to haul them advantageously, though I have used both partially, and always with signal success.

Yours, &c. ED. REYNOLDS.

Will Mr. Reynolds favour us with his opinion of the intrinsic value of barn-yard manure, manufactured out of straw alone, or corn fodder, by simply passing them through the animal machine? How far would he haul it if given to him, or will it pay for hauling—especially after it has been exposed, as it usually is in barn-yards for months, to washing rains and drying winds? Ask Mr. McHenry, of Hartford county, if he would haul such manure more than half a mile, if supplied to him as a "gracious gift."

If such manure could be kept from exposure to the weather, and manufactured from provender, cut up and seasoned with a little oil cake or roots —or if, when applied, it could have an addition of bone dust, then it would tell a different tale.

In our country, turnips are so little cultivated as a field crop, that nobody speaks of the effect of artificial manures in increasing them—whereas it is to that crop, the great basis of improvement in England, that artificial or bought manures, and especially guano, are found to be most advantageous.

The learned and very exact editor of the "London Agricultural Gazette" says :—

For the reasons already named, it is obviously impossible that the principle of applying manure to every crop can be carried out with the ordinary resources of the farm; and for the full development of this system artificial manures are evidently the only available means within our reach.

The result of past experience has been to establish most clearly the value of these manures for the growth of turnips; but their application to the cereals (though undoubtedly useful) has not been quite so successful. Whilst many thousands of acres of the former have been grown with artificial manures alone, we dare not depend upon them exclusively for a crop of wheat or oats. In the present state of our knowledge, it would be difficult to assign a reason for this result of our own observation and practice on a wheat soil. We by no means assert that artificial manures are useless to corn crops. Only the complete success which has attended their use in the case of turnips makes us desire a similar result for the cereals. Whether this will be brought about by improvements in the mode of preparation, or greater skill in the application of these valuable manures, time alone can decide.

In the meantime we are glad to be able to report on the result of a series of experiments, that artificial manures are likely to prove very valuable for the clover crop. Should our anticipations prove correct in this instance, it will be a great boon on strong soils, where clover has hitherto been the only or principal green crop.

It will be borne in mind that in England, as in some parts of this country, plaster does not act on clover, as it does in many parts of Maryland, and other of the United States.

A NEW APPLICATION OF MOTIVE POWER.

One of our objects in "The Plough, the Loom, and the Anvil," is to promote labour and time-saving improvements in all sorts of machinery—for the more time saved in the transportation of men and other commodities, the more there will be left for productive industry of every sort. This is the great secret of the immense increment of population and propulsion given to all the movements and products of the world, since the *application of steam.* The increase of the *productive power* of man has been even ten-fold greater than the increase of his numbers; the one adding beyond calculation to the growth of the other—and here, in the construction of improved roads, and the use of improved machinery, we behold the true sources of that impetus to the growth of Massachusetts, which has enabled her, instead of continuing, as she had done for a century, behind North Carolina, the latter rather widening the gap between them, and with all the disadvantages and drawbacks of slavery in the old North State during the whole time, when, and only when, the people of the Bay State betook themselves heartily to the use of steam, and the application of improved machinery—to the construction of railroads, and the arts of manufacture—that moment she sprang forward, and now behold, she has not only gone by the old North State in population, but is fast shooting ahead, even of Virginia! In 1790, Massachusetts had but 378,719 inhabitants—while North Carolina had 393,751. The latter being ahead of the former only 16,000, while in thirty years after that, the "peculiar institution" being in full force during the whole time, Massachusetts had but 523,287—while North Carolina had gone up to 638,829—making between them a difference of 114,542 in favour of North Carolina! But how is it now, after the lapse of another thirty years, under the influence of the causes to which we have referred? Behold, Massachusetts has shot up to *very nearly* a million, or about 200,000 ahead of North Carolina, instead of being, as thirty years ago, more than 100,000 behind her! Some will say all this is the result of slavery. But did not slavery exist, just as it does now (with the exception of the melioration in progress everywhere), during the first equal period of thirty years, that she was leaving contracted, and agriculturally speaking, barren Massachusetts, every year further and further in her wake? No! If any man wishes to realize the true elements of their comparative progress, let him open a copy of Appleton's "*Traveller's Guide,*" and see how railroads have been ramified from Boston over the whole of that and adjoining States, looking everywhere instinctively for what they create, the elements of wealth and population, as roots are said to have the faculty of searching for food!—all these roads, concentrating at her manufacturing villages, and her great seaport, as the spider concentrates at his residence the meshes of his web. Let him but behold in how little time, and for how little money, a man may fly over all New England, wherever he can turn a penny, living, in fact, for all the useful purposes of life, more in one year, than the man in North Carolina does in ten, wending his way at four miles an hour through forests of pitch-pine, singing as he goes—"free trade"—"free trade." Let us send to step-mother England for our cloth and our iron, and so starve out the d——d Yankees. Such is the cut-off-your-nose-to-spite-your-face-policy lately suggested by one of her most honourable and honoured sons, speaking in a very high place. Is it any wonder that at last that good old patriotic State has been so badly beaten in the race for excellence, by people who have the sagacity to see that diversification of employment gives to minutes the value of days; and that to promote improvement in everything, the great secret is, to *make a market on the land for the products of the land.* In a word that you must, by the all pervading and everywhere resistless power of self-interest, draw the loom and the anvil

close to the plough and the harrow—or, as Mr. Jefferson said, place the manufacturer by the side of the agriculturist!

Astor House, New York, *July* 9, 1850.

The Patent Impulsoria.—An ingenious means of applying animal power to the working of railways, so as to supersede the costly locomotive engine, has lately been invented in Italy, and exhibited experimentally upon the South-Western Railway. It consists in introducing the animals into a kind of coach, called impulsoria, by which they transmit their acting power to the leading wheels. This transmission is conveyed by very simple means, rendering useful both the driving power of the animals and their own weight The horse being thus introduced into the impulsoria, is placed upon a perfectly rectilinear, artificial ground, or platform, turning so easily that the animal, which is yoked to the shafts, when it walks does not itself advance; but, what amounts to the same thing, the platform itself is pushed backward. By this artificial ground platform, called by the patentee *pedivella*, is moved a tree, around with a pulley, from which, by means of a rope, the motion is conveyed to the axle-tree of the leading wheels. The varying proportions between the diameters of the pulleys give different degrees of speed. The horses are to be worked always at their usual pace, whilst the new locomotive will be able to run at any requisite speed, even at sixty miles an hour, without even altering the usual walking pace of the horses, which are inside the impulsoria as on the floor of a room, sheltered from the weather. The importance of introducing the horses into the carriage, in order to get more speed from the surplus of the acting power, had long been thought of; and the principle has been several times attempted, in England, France, and Italy; but hitherto without success. The new machine, whose inventor is Signor Clemente Masserano, from Pignerol, Piedmont, has been brought from Italy to England, and deposited at the Nine-Elms terminus of the South-Western Railway, where it may be seen working on the line. It has been made for two horses only, and they work it very well on the *pedivella*. More than thirty wagons have been already experimentally drawn by it up the very inclined line of the station. For working it up and down the station, a wagon is fastened to it, when it attains a speed of seven miles an hour. In the experiment to be made on the great line, it is expected to gain a speed of from fifteen to twenty miles an hour, and it is calculated that an engine of two horses more will run at a speed superior to that of a steam engine. The impulsoria runs either way, like the steam-engine; but the driving-horses do not change direction or movement. They can instantly be stopped, without dropping the machine; and the machine can likewise be stopped, while the horses continue to walk on the *pedivella*, without transmitting motion to the leading wheels. By the simple manner in which the horses exercise their moving power on the new machine, they can work easily the usual time (commonly about eight hours a day). During these eight hours, the impulsoria can run at least over thirty miles eight times; and as four horses do not cost much more than two shillings each per day, it would be an expense of eight shillings only, instead of £6 on account of coke only, the cost of which is sixpence each mile run. Such economy is of the utmost importance to the numerous interests engaged in the railways, subject to enormous working expenses. According to the statements by Dr. Lardner, in his valuable work on "Railway Economy," the locomotive power and stock absorb always more than half, and often four-fifths of all the working-expenses. But the principal advantage of the new machine will be to afford very cheap locomotive small branch lines, thus extending the advantage of the railway to localities hitherto impracticable from the expensive moving power. The directors of the South-Western Railway were the first to receive the propulsion on their line, where they have granted every facility to its ingenious inventor; for which courtesy he has especially to thank the engineer-in-chief of the locomotive department, Mr. Gooch, and his assistant, Mr. Trevethick.

A writer in Downing's Horticulturist very strongly recommends the refuse of a blacksmith's furnace as manure for pear trees, buried in as far as the roots extend, to the depth of seven inches. He says it was composed of cinders of the forge, fine scales of iron, iron filings, parings of hoofs, clinkers, charcoal dust, and the ashes of bituminous coal, the latter constituting about one third of the whole.

The second year the trees grew a third more in height, than others in the same rows not dressed. The wood was stronger and the buds longer. In the third year the trees so dressed were "half as large again." The writer continues—"*Four* pear trees, to which I gave, by way of experiment, a peck of *leached* wood ashes each, at the same time with sweepings, have all along been decidedly the most vigorous of all, and have borne the finest fruit.

I follow the plan suggested some time ago in the Horticulturist, of keeping the trunks of my pear trees sheathed with straw all the year round; and, *since I have done so, have not been troubled with blight.*

PORTRAIT AND PEDIGREE OF A SHORT HORN HEIFER—PRINCESS III.

This number presents a portrait of a short horn heifer, Princess III., roan, "calved in 1848, in England, bred by Mr. John Stephenson, now the property of A. Stevens, got by Napier (6.238), dam Rose by Bellerophon (3.119), &c. She is full sister to Princess I.," bred and owned by the same parties. In 1849, Mr. Stephens selected in England and imported thence seven short horns, for J. M. Sherwood, J. F. Sheafe, and himself.

Their pedigrees are given at pages 450, 1, 2, and 3, of the *Transactions of the New York State Agricultural Society*, for 1849. The figures refer to the *Herd Book*, in which the bulls are registered and numbered. We can only make room to designate sire and dam of each, leaving the reader to turn either to the English *Herd Book* or to the "*Transactions*." In the latter he will find, as connected with these pedigrees, a long account of "the ancient family of the Aislabies, which came into England from Normandy, with William the Conqueror," and which account goes back some 550 years, and reads more like the commencement of a biography or romance, or the trace of some old land title, than the pedigrees of cattle. But what follows will show the pertinent connection between the pedigrees of the men and women, and the bulls and cows.

"As early as 1600 the families of Aislabies was known to possess," says the legend before us, "a *most extraordinary tribe of cattle.* In the reign of Charles I., the then lord of the manor married the daughter and heir of Sir John Mallorie of Studley, in Yorkshire, and on the death of Sir John, the daughter, Mrs. Aislabie, succeeded to the ownership of the Studley estate. Mrs. Aislabie and her husband went to reside at Studley, while the younger branch of the Aislabie family continued to reside at Aislabie. Finally, in 1684, the younger branch of the Aislabie family parted with their estates in Durham. At the time Sir John Mallorie's daughter, Mrs. Aislabie, took possession of Studley, the cattle of Aislabie were in part transferred from Durham to Yorkshire, and the remainder in 1684."

And the said legend further relates how

"About 1700, a Miss Aislabie of Studley, married Mr. Millbank, of the Birmingham family of Birmingham, in Yorkshire, and through this marriage cattle from Studley went to Birmingham."

For further particulars the curious reader is referred to the "*Transactions*" aforesaid of the New York State Agricultural Society. Return we to the cattle purchased as aforesaid, and which it is not to be doubted are choice specimens of the purest blood. The portrait we give depicts a fine symmetrical form, if anything a shade too much tucked up, but the represented *length of the hair* is, we should think, as the French say, *un peut fort.* It seems to border rather too much on the curl of the shaggy, long-haired dog. The short horns are generally rather light in their covering, exposing them to suffer, perhaps, somewhat more than other cattle, from *wet* in winter, making good shelter for them more peculiarly necessary. The pile, however, is generally deficient rather in thickness than in length. Both length and softness of coat are points to be esteemed.

Cattle selected in the year 1849, in England, and imported thence for J. M. Sherwood, J. F. Sheafe, and himself, by A. Stevens, Esq.

Red Rose 2d, red in colour; calved 1846; got by Napier (6.238); dam Tuberose by South Durham (5.281).

Princess I., red; calved 1846 by Napier (6.238); dam Rose Ann by Bellerophon (3.119).

Princess II., roan; calved 1848; by General Sale (8.099); dam Dutchess by W. Bates, 4th Duke of Cumberland (3.649).

FIELD. After DOLBY.
JOHN ANDREW. Sc. N.J

Princess III., roan; calved 1848; full sister to Princess I.

Red Rose, roan; calved 1848 by General Sale (8.099); dam Maid of Orleans, by Mameluke (2.258).

Third Duke of Cambridge (whose portrait we shall give); calved 1841 by Duke of Northumberland (1.940); dam Waterloo II., by Belvidere (1.706).

Waterloo V., roan; calved 1841 by Duke of Northumberland (1.940); dam Waterloo III., by Norfolk (2.377).

We are further and kindly informed in a note, in the "*Transactions*" aforesaid, for the satisfaction of those who have the curiosity to learn, and the time to study it out (in connection with these individuals of the most distinguished families of short horns), that

"The history of the Aislabie family may be found in Hutchinson's, in McKenzie's, and in Surtee's History of Durham—and the history of the Mallories and the Aislabies in Yorkshire, in Bingham's History of Yorkshire; and the facts in reference to the Hutchinsons, from the papers of the late Doctor Stephenson, of Kelso, who was born at Ketton (so he was); and what relates to the Halls, from those of Alexander Hall, lately deceased."

England is a small country, not so large as some of our States—a country in which, while the thousands are starving, the income of the nobility is counted by hundreds and thousands of dollars per annum. These lords of manors may keep up herd books, and family trees, to register the pedigrees of their sons and daughters, and bulls and cows; but desirable as it might be here, to trace the blood of the latter, it is much to be doubted after all, whether the farmers of the United States can successfully aim at more than judging by the form, and handling; together with a knowledge of ancestry, for one or two generations. As to certain points of form, and true principles of breeding, every one should be instructed; and to that end we give an admirable essay from Sir John Sebright in this number; and intend to follow it with Surgeon Clines and others.* After all, the best means, with such plain guides as these essays supply, for the common farmer, is to select the best bulls and cows at his command, and *never to breed from inferior animals*, and above all, never tol et anything tempt him to pass off an inferior one, *without disclosing its known defects;* unless it be to the butcher for his knife, and who would not thank any one to tell him what his own more practised eye cannot discover.

In the same very ponderous volume of the "*Transactions*" of all the county societies, in which pretty much the same story is told from year to year, we find what we take to be the Report of a Committee on the subject of "Dairies," covering some fifteen pages, in which are brought together from various writings many old statements about the "Cramp cow, owned in Lewes, England," together with facts as to quantities of milk and butter obtained in New York Dairies, which must prove interesting to those who meet here with these writings and facts for the first time.

It is there stated, as to breeds—"The society has endeavored to ascertain the breed of cattle best adapted to the purposes of the dairy, but as yet, cannot learn from the competitors, that there can be *any decision as to particular breeds in this State, which are preferable.* From an examination of the statements of competitors at Syracuse, eleven in number, who referred to their cows, *nine* were of what is called the native breed, and *two* mixed more or less with Durhams or short horns. In the trial of *five* cows for thirty successive days, it will be seen Mr. Holbert's five cows in thirty days made, from 23d May to 21st June, 264½ pounds of butter, averaging over 1¾ pounds per day each. His cows were native with a slight mixture of Durham—what proportion is not stated. Mr. Nelson Van Ness, of Westfield, made 221 in thirty successive days, averaging nearly 1½ pounds each per day. His cows were stated to be of the common native breed. The only trial which has been made in this State with pure short horn cows as to their

* We have been compelled to postpone it.

dairy qualities, which has come to our knowledge, was made by George Vail, Esq. in 1844. He had six cows, from whose milk in thirty successive days he made 262 pounds 9 oz., averaging 43 pounds 12 oz. per cow—not quite 1½ pounds per day. One of the cows, whose milk was kept separate, made 52 pounds nine ounces, being 1¾ pounds per day."

Now, according to this statement it might be inferred, that the pure Durhams or short horns, were inferior as well to the cows only slightly sprinkled with Durham blood, as to those that were only of the common vulgar country breed, whose remotest ancestors were never honoured with a place in a Herd Book. But can anything be more fallacious than such tests unexplained, whether as the basis of private judgment, or of awarding State premiums? In the first place, Mr. Vail was restricted for his cows to his own limited herd of pure short horns, whereas Mr. Holbert and Mr. Van Ness had the whole "world before them where to choose." Mr. Vail had to take such cows as he had; whereas, these other gentlemen, following the dairy business, as a business, probably collected, with excellent judgment, the best cows to be had in their county. And, again, when the results come to be so near, who can say by how little difference in keep and management, it may have been determined? Nevertheless, to farmers generally, it ought to be a great amusement, as it is an imperious interest, to learn to judge of and select the best cattle within their reach and means, and lay themselves out to derive great satisfaction from establishing a stock of their own breeding and construction; just as yesterday we heard a gentleman—there can be no harm in saying, Mr. Schroeder of this place—felicitating himself, very justly, that all the various and beautiful trees and shrubbery that surround and shade and embellish his exquisite little cottage, were planted *by his own hand.*—EDIT. P. L. and A.

NEWPORT, *August* 6, 1850.

A LIVE STOCK INSURANCE COMPANY has lately been incorporated, somewhere in the West—we believe in Indiana.

It is for the interest that those so associated may be supposed to take in the subject, particularly, that we copy the following from one of the late English periodicals:—

"*Cattle Insurance.*—Mr. Samuel Cary Richards lately made the following judicious remarks on the subject of cattle insurance at the Yeovil Agricultural Meeting":—'This was a question of great importance to farmers and to landowners; it had already attracted much notice, but not by any means to the extent it deserved. All descriptions of like stock were now insured, as would be seen by a notice advertised in the "*Yeovil Times*" and other respectable newspapers; and to such an extent had this kind of insurance already been carried, in the office referred to, that the average, for the last three years, had been upwards of 50,000*l.* ($250,000) per week—the startling sum of 2,500,000*l.* per annum; and, to show its value to the farmer, it would be only necessary to state that the Insurance Company had paid, during the last year, for losses of stock, no less a sum than 70,000*l.* It appeared that there were, in England, Scotland, and Ireland 2,250,000 horses, of the total value of 67,000,000*l.*, of which more than 1,500,000 were used in agriculture, and that their value was 45.000,000*l.* The number of black cattle in the kingdom was about 14,000,000 to 15,000,000, of the value of 216,000,000*l.*; the number of sheep 50,000,000, whose value was estimated at 67,000,000*l.*; and the extent of capital invested in swine was still more extraordinary, when they reflected how little it was thought upon, or taken into account. The number of pigs, of all ages, breeding and rearing, was calculated to be upwards of 1,000,000, which, taking one-third at 2*l.* each, and the remainder at 10*s.* each, gave a value of 18,870,000*l.*, as the capital invested in pigs alone, making the total amount of capital in the above species of agricultural stock 346,270,000*l.* If to this was added the annual value of the crops, the capital in the hands of the farmers in the shape of live stock, and the products of the earth could not, at a moderate computation, be estimated at less than 600 millions of pounds! He thought it was unnecessary for him to say another word upon the importance of insuring stock.'"

ON THE ORIGIN OF THE MERINOS.

BY P. A. BROWNE.

In Hayden's "Dictionary of Dates," (p. 467), under the title "Sheep," it is stated that "they were impolitically exported from England to Spain in the eighth year of Edward the Fourth." In Anderson's "Chron. Deduc." &c. (which is quoted as authority for the above, p. 640), it is said that "in 1464 a league was made between Edward IV. and Henry V. of Castile and Leon, by which liberty 'was granted to transport certain live sheep from Cotswold Hills, in Gloucester; that they greatly increased in Spain, and that thence proceeded the fine Spanish wool.'"

Now, this account bears the stamp of error upon it, for the Cotswolds (or Cartswolds as they are sometimes called), belong to the species of *hairy* sheep, and could not have laid the foundation of the Spanish merino, which is a *woolly* sheep, and, to do Mr. Anderson justice, he admits that the story is *liable to exception*, because it seems to imply that, previously to that time, there were no sheep in Spain, which he acknowledges to be *a very improbable presumption;* and he might have quoted Strabo (as Livingston has done) to show that, even in the time of the Romans, beautiful woollen cloths were worn, made from *Spanish wool.*

It is true that Rapin tells the same tale of Edward IV. sending sheep to Spain, but *he* says they were sent to King John of Arragon. And Tindall's note upon the passage allows that there must have been sheep in Spain *before that time;* for as he says, and truly too, in the thirty-first year of the reign of Henry II. (who was crowned in 1154), the weavers of London were notified that, any cloth made of *Spanish* wool mixed with English, should be burned by the Lord Mayor! (See "Stowe," p. 419.)

The author of the History of "Ferdinand and Isabella" (in v. i. p. 55 of introd.) gives another version of this affair. He says that, "in 1394 (which was before the accession of Edward IV.) Catharine of Lancaster brought to the heir apparent of Castile, as part of her dowry, *a flock of English merinos,* distinguished at that time above those of all other countries, for the beauty and delicacy of the fleece." But the word *merinos* is derived from the Spanish word *mesdinos* (wandering), and was applied to the *Spanish* sheep on account of their *migrating*, and was never used in England to designate *any of the breeds of that Island*, which were all *stationary.* It was not till the reign of Henry VIII. that the Spanish sheep and this cognomen were taken to England *together.* That monarch obtained permission from Charles V. to import 3000 of the sheep of Spain, which were distributed throughout England.

If it were necessary we might add that Doctor Ure (in his "Philos. of Manuf.," published in London in 1835) devotes a dozen or more pages to general observations "on wool and its manufacture," from the time of the Egyptians to his day, wherein he particularly notices this important branch of industry in England, and he countenances no such claim. He says that, "in the middle ages *Spain* seems to have abounded in fine-wooled sheep *of the Tarentine breed, which it originally derived from its ancient Roman masters.*"* So far back as 1243 (which was 200 years before Edward IV. commenced his reign), the woollen cloth of Barcelona and Lerida is spoken of with admiration, as being in high esteem at the gay court of Seville in the reign of Peter the Cruel."

* See Plin. Secund. lib. viii. ch. 48. In corroboration it is mentioned in the Lond. Encyc., that the management of the flock *is peculiarly Roman.*

Mr. Youatt, in his essay upon sheep, not only acknowledges that the Cotswold fleece is long-wool (hair), but he says that in 1464 the celebrated present of Cotswold rams was sent by Edward IV. to Henry of Castile, and in 1468 another flock was shipped to John of Arragon, and they *were designed to improve the long-wooled breed of Spain, and never were mingled with the migratory flock from which the modern merinos have descended.* (See "Lib. of Usef. Knowl." p. 212.)

And so in Nicholson's "Dict. of Chem.," title "wool," it is stated that, "*lately*, the breed of merinos, or fine-wooled Spanish sheep, has been introduced into this country by his majesty, and found to retain its excellent qualities. It has also been crossed with *our own breeds* with advantage, so that we may *hope* to become *independent of Spain for fine wool.*" Wherefore, far from England having furnished the merino sheep to Spain, she has twice imported them from that country.

"FIAT JUSTICIA."

But where did the *Romans* obtain this breed of sheep? Columella, it is said, lived near Cadiz during the reign of the Emperor Claudius. Happening to be at Rome he saw some African rams exhibited at the Amphitheatre; he bought some and brought them to Spain, from which a beautiful breed was then formed. More than 1300 years after this time, Pedro IV. of Spain imported some more Barbary rams, and still subsequently by 200 years, Cardinal Ximenes made a third importation from the same place; so that it is not improbable that the merinos of Spain sprang from *Egyptian* ancestors.

TEXAS WOOL.

J. S. SKINNER, ESQ.

DEAR SIR:—I have measured the five samples of wool of Mr. Marsh, Independence, Washington county, Texas, which you sent me, and find them as follows:—

No. 1	1.1572	parts of an inch.
No. 2	1.1572	"
No. 3	1.1875	"
No. 4	1.1875	"
No. 5	1 1250	"

Yours, sincerely,

July 25th, 1850. P. A. BROWNE.

FLAX MADE TO RESEMBLE COTTON.—However much the following method may now admit of simplification, it is very interesting to see how much cotton was esteemed formerly in relative value, and how much skill and capital have had to do with its present general development. In the *Swedish Transactions*, for the year 1747, a method is given of preparing flax in such a manner as to resemble cotton in whiteness and softness, as well as in coherence. For this purpose a little sea-water is to be put into an iron pot or untinned copper kettle, and a mixture of equal parts of birch ashes and quicklime strewed upon it; a small bundle of flax is to be opened and spread upon the surface, and covered with more of the mixture, and the stratification continued till the vessel is sufficiently filled. The whole is then to be boiled with sea-water for ten hours, fresh quantities of water being occasionally supplied in proportion to the evaporation, that the matter may never become dry. The boiled flax is to be immediately washed in the sea by a little at a time, in a basket, with a smooth stick, at first while hot; and when grown cold enough to be borne by the hands, it must be well rubbed, washed with soap, laid to bleach, and turned and watered every day. Repetitions of the washing with soap expedite the bleaching; after which the flax is to be beat, and again well washed; when dry, it is to be worked and carded in the same manner as common cotton, and pressed between two boards for forty-eight hours. It is now fully prepared and fit for use. It loses in this process nearly one-half its weight, which is abundantly compensated by the improvement made in its quality.—*Mining Journal.*

ON WHEAT THRESHERS.

Where, as in this case, for example, and in questions arising as to the quality of wool, and other practical subjects, we are deficient in knowledge or the means of practical tests, we are but too happy to have it in our power and to be privileged to appeal to friends, who unite the disposition with the knowledge and the means to oblige us and our patrons. For the possession of such facilities we are, and feel that we have a right to be, both proud and grateful.

Dear Sir—You wish to ascertain for a friend in Virginia, which is the best wheat threshing machine and horse power of the present day—and further, request me to give some views on the subject generally. I have devoted much attention to agricultural machinery for many years, and have ascertained many facts important for the farmer to know: but, to pronounce at once which is absolutely the best, is more than I can undertake to do. There are many good machines made after various patterns, which will do good work—provided they are faithfully and accurately made, and the cylinder be truly balanced. Most of the accidents which occur, and many result in the destruction of the machine itself—are caused by the carelessness of the manufacturer, and sometimes from defective materials superadded. A little paint covers many defects—and the high velocity put on the cylinders—say fifteen to sixteen hundred revolutions per minute, absolutely requires faithful work. So great is the competition, that various expedients are resorted to to make them cheap—maugre the wear and tear. Therefore, the cylinder is now made with too few acting points—an insufficient number of teeth—and this deficiency is made up, by propelling it at an immense velocity. It requires no argument to show, that the inevitable result must be the speedy destruction of the machine—in other words, that it will be soon used up. Much time is lost from the heating of the cylinder—true when first put to use, all will heat to some extent, and frequent stopping is necessary. It would be well, therefore, to subject the machine to some tests before commencing work. Have the cylinder taken out, and let a level be laid across, resting on the bottom of the lower boxes—if these boxes have been truly inserted in their places—the level will touch the boxes from side to side. This is a very important matter to avoid heating—and what is of more importance still, try the cylinder and see that it is perfectly balanced. The centrifugal force is vastly increased if one side of the cylinder is only one ounce heavier than its opposite—it causes much jarring and heating, increases the wear and tear, and therefore a new machine will soon be required. I will state a case in point:—some years ago, I purchased a machine in Baltimore (Pitts' patent). I asked the builder particularly, if the cylinder was accurately balanced: he assured me that it was. Well, the machine was taken home and carefully set up. I worked it with much caution for two days—never being absent from the barn, as I had some misgivings. During the second day, I happened to be standing near the centre of the barn-floor, and my attention was arrested by the extraordinary vibratory motion or jarring of the floor, the machine being in full action. I came to the conclusion at once that the cylinder could not be balanced, and accordingly took the cylinder to a shop the next morning. It was soon manifest that one side of the cylinder was a *pound and three-quarters too light.* Now, let us suppose that this machine had fallen to the lot of a farmer who pays no attention to these things—be it premised that it was a hollow cast-iron cylinder. What, most probably, would have been the result? A burst up before the crop was threshed out, and perhaps the death or maiming of one or more. Need I add the importance of setting up the machine truly and firmly—well braced—no jarring. If on a plank floor, it should be so supported from below, that there should be no spring—all should be solid and firm.

Having made these preliminary remarks, I come now to the choice of a machine.

I am best acquainted with those manufactured in Baltimore, and have little doubt that as good can be obtained there as elsewhere. Sinclair & Co.'s machine and power is used by many and much approved of—I have never seen this machine in operation. I have seen Drury's at cattle-shows—it looked admirably. It was conceded on all hands that both machine and horse-power were stronger and would be more durable than any hitherto seen. It was stated by gentlemen from Anne Arundel county, where a number were in use, that it was superior to all other machines—not liable to derangement, and very rapid and clean in operation.

Whitman's is a capital machine—he has announced an improvement in the teeth of his cylinder, and certainly this was the weak point. With this improvement properly carried out, for I have not seen it, I should pause in making a selection between the two. The teeth of his cylinder *were* too long, and drawn out too thin, and hence liable to bend and come in contact with the teeth in the concave, and moreover to wear out the sooner, a matter of much consequence to the farmer. I have little doubt that this objection has been obviated. Whitman has also a fan connected with his straw carrier—very beautiful to behold—and which cleans the wheat while threshing, and by the same power. I think there is wheat lost by the operation, although much labour is saved—but the variableness of the winds, and the consequent blowing back of the chaff, is a great objection. The fan may, however, be readily detached, and the straw-carrier perform its work, nevertheless. As to railway horse-powers, I have but little knowledge of them, and do not like the principle. I am a merciful man—the incessant strain on the back sinews of the horse standing on an inclined plane all day—aye, and for weeks—must be injurious to him. This power, however, has its advocates—I shall never test it.* But, the sweep power is not without objection—the walking in a circle all the time, and also the liability to gall. The moment, however, the machine stops, the animal is at ease—not so on the other power—the back sinews are not relieved from tension, during the many intervals which unavoidably occur during a day's threshing. The galling may be greatly mitigated, if not completely avoided—by using very long swingle-trees—such as are wholly unsuited for the corn-field: and every farmer ought to keep a set especially for the *sweeps*. I am indebted to George Page, that prince of mechanics, for this information, after having my mules and horses horribly galled for years. The name of Page recalls to my mind the fact—that he has made one of the best, if not the very best horse-power, that we have in our country. It may cost more money at first, but in the end it may prove the cheapest. Certainly the whole construction and arrangement are admirable. As regards his thresher I have no knowledge, having never seen one under any circumstances. There is one almost universal mistake—the band which drives the cylinder is usually from four to five inches wide only. There are usually six horses or mules attached to the sweeps—and there ought to be one inch of band in width, for every animal employed in propelling the machine—otherwise, the band will slip and power is lost. A band, therefore, should not be less than *six inches wide*.

I have endeavoured to comply with your request; it is a dull subject truly, and admits of no embellishment—but certainly it is one highly interesting to the farmer—and may guard some against imposition. It may also open the

* Passing lately on an Eastern railroad, a lady called our attention to a horse at work in this machine, sawing all the wood for the steam-engine.

eyes of a few, to some simple facts in machinery—"never dreamt of in their philosophy." I have been writing while the thermometer has been ranging at 90° in a cool place—and in a condition of body too, almost disqualifying me from thought or effort; I must claim indulgence, therefore, for negligence or omission.

WHAT HAVE FARMERS AND PLANTERS TO DO WITH EDUCATION, ARMIES, NAVIES, PEACE AND WAR, AND SUCH LIKE QUESTIONS AND THINGS?

THE perusal of the foregoing, on agricultural machines, prompts us to say that it would not be easy to specify any kind of knowledge more essential to farmers, and in which they are more deplorably and generally deficient, than the knowledge of the *principles, or philosophy of agricultural machinery*, to be supplied by familiarity with the higher branches of mathematics, and the very sort of knowledge most perfectly attained in the course of a *military education*, now bestowed at the cost of the planter and farmer, on the elect of the land, on whom, and on whom alone, are also bestowed life commissions, rations, quarters, transportation, ever increasing pay, pensions, &c.

Now, well persuaded as we are, that the cultivators of the soil will be ever ready in this, as in all countries, to bow and submit to the prestige of military eclat and power; and that they will never have the spirit to unite in demanding for the plough, at least as much of government instruction, as is given at their cost, to the sword; we would, as the next best and seemingly the only practicable mode of turning this military education to civil account—we say as the next best, and most practicable thing, we would humbly recommend that those military schools for army and navy be *very much multiplied*. We would have one at least, if not in every State, in all the four great divisions of the country. The course of education should be the same precisely as that at West Point, with the exception of *ploughing* instead of *shooting!* if we could have it so; but inasmuch as none are so much captivated and exhilarated as "*country* people" at the sight of fine regimentals, and the sound of the drum and fife, that substitution of the plough for the sword, we well know, is at present altogether hopeless. As the next best thing, then, that alone which public sentiment can, *at present*, be brought to sustain, we would greatly multiply these military schools. Let the drum beat and the fife play, and the cannon roar, to captivate the sovereign people; yes, we would thus educate thousands instead of tens; but we would do it as the best *substitute* (except railroads and canals) for fortifications, and armies, and navies, and when thousands are thus well educated at the expense of the planter and farmer, in branches of knowledge eminently useful in all civil employments, we would have them take their degrees and *be dismissed!* to go, like all other young men, to mingle and seek their fortune among the people, and ready in large numbers, in all the States, to discipline and take command of the militia, in the event of being forced into war, that greatest of all calamities, and when aggressive, that greatest of all national crimes.

The very act of graduation at a military school, proves the possession of precisely that kind, and that variety of attainments which qualify the graduate to make his way good, especially in a young, growing, and undeveloped country like ours; and to be at the same time eminently useful in the application and distribution of the knowledge thus conferred at the public expense. Put the graduate, for instance, on a farm, or in command of a ship, or a steamboat, or a factory of cloth, or of sugar, or starch, or soap; put him where you will in the employments of civil life, and his military instruction so called, and now given only to warlike purposes, will have qualified him to prosecute the industrial pursuit, whatever it may be, with the highest degree of intelli-

gence and power. For after all, look at the lines of study marked out on the programme of a military education. Does it not embrace close attention to everything essential to the highest success in the "dull pursuits of civil life?" A good hand-writing, a knowledge, that will stand the test of the strictest examination, in grammar, in arithmetic, in all the highest branches of mathematics, including practical surveying and civil engineering! in chemistry, in botany, in geology, and even in the French language. Yes, undoubtedly. And who does not believe, that for such a schooling, to be had altogether at the public expense, and for such a diploma, there would be thousands of candidates more than could be admitted, and even though (like all young men in civil life, educated at their own expense) they were to be, after graduation dismissed and sent throughout the States, with these high qualifications conferred by the public, to seek an honest livelihood?

Such, farmers and planters, if you must support military schools, is the civil account, for public benefit, to which they might be turned. On this plan, ceasing to maintain them as now you do all their lives, whether in active service or not, we should have all the channels of useful industry filled with men fitted to follow and push them to the highest degree of improvement. The farmer thus educated, could explain the principles of all agricultural implements and machinery, why a wagon should be made in this form, and a threshing machine in that; how to take levels and to irrigate land; how to construct gates, bridges, roads, and canals, &c. There would be, at least in every county, a farmer, and in our colleges and schools, instructors, capable of analyzing soils and manures, of characterizing grasses and plants—for all these are the very subjects with which his education (given now at your cost, only for military uses that may never be demanded) would make him familiar, and then, in case of war being *forced upon* us from abroad, which is not likely to happen (unless to give preponderance to some domestic faction in case of internal discord), the whole country would abound in men qualified to discipline the only army this country ought to have, *the militia of the United States.*

The same may be alleged of a nautical education, now conducted at the public expense, for the maintenance, in ships and palaces, of gentlemen commissioned for life, and pensioned afterwards, because forsooth we may some day have war! The most fruitful and frequent cause of war always has and ever will be, the *presence of armies and navies.* War relieves them from *ennui*, while it justifies the maintenance and gives active employment to forces that would otherwise rust for want of something to do. Does some poor exhausted nation owe us a few thousand dollars, we have nothing to do but to order a regiment of men, or a squadron of ships, that in years of idleness have cost us millions, to go and make a demonstration. A blow follows, and the blood of the nation is up, and millions on millions of debt is contracted, which the farmer and planter must pay, but in a manner (by borrowing) that as, poor easy soul, he does not know how or when, so he cares not about the amount, until at last his very substance is sweated out of him, to pay taxes, and salaries, and pensions, to the survivors and widows of "the glorious heroes who shed their blood for their country!" But who are to man our fortifications? Who to clear our frontiers of the Indians, says the advocate of ships and armies? In the first place *we need no fortifications.* As Lieut. Maury says, and as the venerable General Gaines demonstrated long ago, railroads to bring our interior forces to the defence of our exterior lines, are the best fortifications we can have; and as for the Indians, one-twentieth of the money expended in maintaining a military force would keep the poor wretches in submission, unless it be thought better to give them at once, the quietus of the bayonet in advance of the certain extermination that awaits them.

And now, says the reader, what has your journal to do with peace and war, armies and navies? Can any one at all familiar with the origin and objects of this work, require an answer to such a question? Have we not said, again and again, that our ambition is to tempt the cultivators of the soil to look a little beyond their noses, a little beyond the depth to plough, and the time to prune? We thank our stars in the belief that our intercourse is with an order of men who take pride in the godlike faculty of *thinking*. For the satisfaction of these, we would fain repeat *why* it is that we endeavour to show the connection between the condition of the farmer and the planter; and the subjects of education and taxes, and armies and navies, and peace and war; but for the present, for want of space, and with an aching head, we must conclude these hasty remarks, with a short quotation from a chapter yet to come, under the head of "Harmony of Interests, Agricultural, Manufacturing, and Commercial." It is the one in which Mr. Carey shows "HOW PROTECTION AFFECTS THE FRIENDS OF PEACE."

"The more spades and ploughs employed, the larger is the product of labour. The more perfectly peace is maintained, the greater is the number of persons who may employ themselves with spades and ploughs, the more rapid must be the increase of production, and the larger must be the reward of the labourer and the capitalist. The more swords and muskets employed, the smaller must be the return to labour. The more wars are made, the greater must be the number of persons employing swords and muskets, the slower must be the increase of production, and the smaller must be the reward to the labourer and the capitalist."

Let those who think there is no danger of any material increase of public expenditure, to which the cultivators of the soil, who are the real paymasters, should never be indifferent—let all such remember that during the administration of Col. Monroe, the expenses of this government averaged little over thirteen millions. Those of the administration of Mr. Adams, little over twelve millions; while for the year ending June 30th, 1850, our expenses were—

For war, ...	$12,798,976
" navy, ...	7,908,830
Total, ...	$20,707,806

enough, at $20,000 a mile, to connect by railroad every town in the United States, containing over 10,000 inhabitants—aye, enough to build a railroad from New Orleans to the Falls of St. Anthony. Have farmers and planters nothing to do with these items? But let us make one more extract from the "Harmony of Interests." We shall of course give the whole chapter when we come to it:

"England is now the great war-making power of the world. It is by means of the monopoly of machinery for the production of iron, and for the conversion of cotton into cloth, that she is enabled to tax the world for the maintenance of her fleets and armies,* for the prosecution of those wars. To destroy *her* power to make war would be to bring about universal peace. Protection to labour in other countries tends to limit her power to tax the farmers and planters of the world, and thus to limit her power to raise revenue for the payment of soldiers and sailors, while it tends to raise the value of man, and thus make soldiers and sailors more costly. In both ways it tends to diminish the power to maintain fleets and armies, and to promote the maintenance of peace.

* Sir Charles Napier has addressed a letter to the public, which fills five closely printed columns of the "Times," upon the subject of the navy and its expenses. The sum and substance of what he says seems to be, "that we have spent about ninety millions sterling [$450,000,000] during the last twenty-eight years in rebuilding our navy twice over, and now we cannot even find the fragments." Such are the results of the system of "ships, colonies, and commerce."

Every friend of peace is therefore bound to use his efforts for the destruction of *the monopoly system.*

"The London *Times* recently published, with approbation, a letter from the East Indies—from a British officer engaged in the battle of Goodjerat, from which the following is an extract. It is deserving the careful consideration of every man who has heretofore aided in the maintenance of the system:—

"'The enemy were in the sands trying to escape, and our men *knocking them over like dogs.* . . Some of our men screamed out, 'They are off!' Fordyce's troops went off at a gallop, our men giving them three cheers—such cheers—*it was a perfect scream of delight and eagerness!* and you may be sure I assisted and yelled till I was hoarse! . . . Every wounded Sikh was either shot or bayoneted (!!) . . I rushed up with a few of the grenadiers and found four men re-loading their pieces; three were bayoneted, *and I was hacking away at the head of the fourth,* when Compton, of the grenadiers, shot him. The last shot was fired at an unfortunate Goorer in the camp, who was seated quietly reading their Grunth! . . . We waited at this place about two hours; and I can assure you they were about the *jolliest two hours* I ever passed. I never enjoyed a bottle of beer so much in all my life!'"

HAY-MAKING IN ENGLAND.

NOTHING can give a better notion of the difference of climate between England and the United States than the following directions in a very late paper for hay-making in that country. If we had to bestow that much labour on ours—and yet more, if the English had the same climate that we have, with their pauper labour—men and women—they could undersell and supply us with pressed hay, as they do now with railroad iron:—

"*Hay-making.*—The best farmers put it through the following process. Suppose the *weather fine,* all the grass cut before noon, and in the afternoon of the preceding day, is very well shaken out by hand (not with a pitchfork), so that scarcely two straws together lie in the same direction. That part which was shaken out before 10 o'clock is turned over before dinner, and the remainder immediately after dinner. The whole is turned over again before 4 o'clock. Then before 7 o'clock (before any dew falls) the whole is made into foot coils with the rake and foot. After the dew is off next morning it is well shaken out again, with the hand, into plots; the intervals narrow, or wide, according to the weight of the crop. Then turned over before dinner, shaken out again after dinner, turned over again by 4 o'clock, then made into windrows of five or seven turnings each, and put into cocks of about one cwt. each. Next day shaken out and turned before dinner, and after dinner turned over again, being then made into large windrows, and carted to barn or stack; or, made into big cocks of five or six cwt. each, to be carted the first opportunity. Care is taken to cock up every night before the dew falls, which is of considerable importance in making good hay. Neither should the sun be allowed to burn one part by its lying undisturbed half or a whole day. By this mode hay is made in one or two days' less time than by a more careless manner of making. In showery weather the farmer has to be exceedingly watchful to see that it is always put into cock before rain. In other parts of the country far less care is taken in hay-making, but, I am quite satisfied, to the loss of the farmer."

NOISELESS CARRIAGE-WHEELS AND HORSE-SHOES.—In the *Mining Journal* of July 22, 1848, we noticed the introduction of some improvements in the construction of wheels for carriages, by Mr. Andrew Smith, the patentee of the wire-rope machinery, which were likely to prove of much value to the public, as not only adding greatly to comfort in travelling over paved streets, from their being perfectly noiseless, but from their combining a much greater degree of safety. The principle consists in forming the hoop or tire of two separate layers of galvanized iron, which are rivetted together, and re-galvanized in the mass; this division of parts cutting off all vibration when travelling over the roughest stones. Mr. Andrew Smith has also applied the principle to springs, in which each plate is galvanized separately, and can never rust. The axle is also made to fit the axle-box with perfect exactness, by a lining of fusible metal; is self-lubricating, and not liable to heat; the whole in conjunction secures a degree of quiet, ease, and safety hitherto unattained. We have been led again to notice these ingenious improvements, from the fact that the patentee having produced a noiseless carriage, found that the horses' feet made more noise than ever, and seeking for a remedy has applied the same principle to the horse-shoe. This is effected in the most simple manner, by making the shoes in two thicknesses of galvanized metal, the rivetting them together, and re-galvanizing. A horse equipped in these pumps trots over the granite streets of London as softly as if he was on a bowling-green.

REMARKS ON PISCICULTURE—OR THE CULTIVATION OF FISH AS A PRODUCT CONNECTED WITH AGRICULTURE.

I PROPOSE in the following sheets to offer a few remarks on a subject which has not, as yet, occupied the attention, to my knowledge, of the farmer and land owner in the United States.

It is well known, that in the palmy days of ancient Rome, the raising of fish for the table, and domestic use, was a very extensive branch of trade. And the piscinia, or fish ponds, in different parts of Italy are mentioned even by the Roman poets.

At present, scarcely any attempts are made even to protect the fisheries, with the exception, perhaps, of those of the oyster, from the depredations of men, and the effects of the growth of towns and cities, on neighbouring water-courses, which are the *wilds* where nature produces to our hands this very nourishing and palatable article of food.

The presence of a pool, in a garden or in the vicinity of the house, as a means of ornament, might be turned to good advantage in this respect, and fish of various kinds might be kept, which would add greatly to the health of a family, and might even be made a means of pecuniary profit.

There is perhaps no class of people, except the sea-faring men, who suffer so much from the want of a daily supply of fresh animal food, as the farmer. For the most part he depends for his fresh meat upon the occasional killing of a calf in the spring, a chicken in the summer, and of his beef or pork in the winter; but these are particular seasons when he is supplied with fresh meat, and do not occur daily. On the contrary, the greater part of the year is passed without it.

In addition to this, the variety of food so necessary to robust and proper health is not obtained, but long seasons are passed on a single article of diet; and as far as fresh fish are concerned, he generally depends, either upon a neighbouring city, or the occasional supply of amateur fishers.

It is quite evident that a regular supply of fish of a great variety of character, might be had by the poorest farmer, by a little attention to the matter, with the great advantage of being a very cheap diet.

No wealthy farmer, certainly, should be without the means of supplying his table with so necessary an article.

I would propose that ponds of running water, that is, ponds where water is continually supplied and going out at the same time, be the stream ever so small, be, in the first place, kept clean from all foreign substances. Stones, sticks, manure should be kept out of them. The cattle or pigs should not be allowed to go in them. They should be surrounded by grass, and some trees, and fenced with a proper fence, and even a rough stone wall might be constructed to protect them from freshets.

Such fish as trout, eels, catfish, sunfish, perch, rockfish, suckers, chubs, &c., should be introduced, and their habits carefully studied. The eel is a very good and agreeable food, and the mud of those ponds would, with the grass, worms, and vegetable matter, be the proper place and food for them. Men in Paris, where it will be admitted the people know something of good eating, have been known to accumulate large fortunes from their known skill in *cooking eels.*

The trout would flourish in ponds made just below or near springs, where the water was clear and cool, and the bottom stony and gravelly. A simple breastwork across a little stream from a spring-house, would make a pond that might at once afford shelter to fish, and supply neighbouring lands with water by means of little ditches cut into it for irrigation.

Catfish, sunfish, eels and suckers would live well in ponds with soft bot-

toms, and plenty of mud; and when this was not sufficient, to supply them with food and protection, the offals of the kitchen, stale bread, &c. would be eagerly devoured by them, and they would fatten fast.

When the fish were wanted for the table, a scoop-net, which a small boy could use, or a line and hook, or allowing the water of the pond to become low, so that the fish could be caught in other ways, would be necessary to get them.

After cultivating several kinds of fish for some time, the food best adapted to them would be known, and their habits would form a pleasant study for the younger members of the family, in the same way that they now study and understand the habits of the cattle, horses, sheep, dogs, &c., around them.

Should a large stream cross the land of a farmer, a considerable *dam* might be very easily constructed, and he might as regularly go to market with his fish in their season, as he does now with his calves, sheep, pigs, or chickens; with this great advantage, that the cost of raising them would be infinitely less, and the care of keeping, once the ponds and streams are well stocked with fish, almost nothing.

"People (says Mons. Coste, in the 'Comptes Rendus') exclusively occupied in fishing for eels, which are a great source of trade, on account of their abundance (in the Lac de Comachio), live, so to speak, on nothing else; and are very robust, and live longer than their neighbours who eat other meats. Where young persons among their neighbours become weak and consumptive, they are sent to these marshes, and partake of the fare and employment of the fishermen. It is, therefore, desirable that these fish should be cultivated to an extent to become the principal food of the people; but to attain this purpose certain conditions are necessary, which observation and science will point out sooner or later."

The same author says, that "every year about the month of March or April there is found at the mouths of all streams and rivers, in the evening, the strangest and most curious phenomenon possible to be conceived. Myriads of filiform transparent animalcules, from two to two and a half inches in length, rise up in compact masses, on the surface of the water, whose course is indicated by the dead bodies of the animals on neighbouring surfaces. In some countries the people arm themselves with long poles, on the end of which they attach a seive, with which they scoop up the fish attracted to them by torches. They dip these seives in the water, and after moving them about for a short time under the surface, they lift them up, loaded with a species of slime or living froth, which they place in hogsheads and bung up. This substance, when closely examined, is found to be composed of filiform animalculi, and is nothing less than young eels, migrating from the place of their birth to canals, lakes, and other streams, which communicate with the river whose course they follow. It is to these *swarmings* that we are indebted for our supply of eels in all the localities where they are found, notwithstanding the great mortality which must necessarily exist, from the exposed condition of these young eels. These might by any farmer be transported to a proper location prepared for them, and he could thus annually, if necessary, supply his *eeleries* with a new stock."

The same author states that he found these young eels grew in seven months, from one inch to one and a third inches in length, and four lines in circumference, to four inches long and nearly an inch in circumference. And this in a confined space, far from their native streams. At twenty-eight months they were eleven inches long, and two and a third in circumference. These eels were poorly fed, and would probably grow much faster if well fed and in good circumstances. A calculation might easily be made as to the rapidity of the growth of these creatures, and experiment has also been re-

sorted to to test the matter. An eel three years and a half old measured fifteen inches in length, and four in circumference. Another weighed, at seven years of age, four pounds.

This rapid growth of the eel will point it out at once as a profitable creature for culture; perhaps more so than any other fish.

The next question is, what are the conditions necessary to the cultivation of eels? And what is the best mode of proceeding in the matter? After the few general remarks made above, with the plain practical sense of the farmer, I doubt not but almost any of them might arrange ponds and brooks in a way to cultivate both eels and other fish, with little or no expense, and with great profit in money and health to himself and family. It is to be hoped that this creature will attract the attention of some of the intelligent of both farmers and others, and command that attention which it really deserves.

Since writing the above, I have visited the western part of New York, and several other parts of the Union, where agriculture is conducted in an improved manner.

In the county of Ontario, N. Y., I found the plan of a fish pond very commonly adopted. Its varied uses may best, perhaps, be learned by a description of one, two, or three, which I there visited. The farm of Gideon Lee, which lies about a mile west of Seneca Lake, on the second of two or three ridges which run north and south parallel to this lake, is a large one, and he has constructed a pond which accomplishes several purposes.

On the side of a slope covered with marshy ground, he has thrown a breastwork across, to the extent of about one hundred yards. This forms a pond of from one to one hundred and fifty yards square, and about nine feet deep. Some three or four small spring streams pour their waters into it. It has several trees around it, but is not very much shaded with tress. The ground below the pond, to the extent of some six acres, is nearly reclaimed, having been previously too wet to cultivate, and doubtless the source of malaria, and consequently of intermittent fevers. The water of the pond is conducted off to the southern part of the hill, and lower down, through an underground pipe which throws it on several wheels which move a *grist-mill.*

The fish in the pond are chiefly *trout*, some seventeen of which, according to the statement of Mr. Lee, junior, were placed in the pond about seven years ago. Since that time, at least two thousand large-sized and well-flavoured fish have been taken from the pond, without any cost to the family. The table can, in fact, be supplied at any time, with any number of these delicious fish. A grass grows in the pond through which the fish make by-ways, and highways, and in which they seem to take great delight. This, probably, is the means by which they cleanse their surfaces of the secretions taking place continually. The meat of the fish is said to partake very much of the pleasant flavour of this grass.

The farm is well supplied with ice from this pond, and Geneva, which stands about a mile off, is also supplied with fine spring water. The pond is not used as a watering place for the cattle, as is the case on some other farms which I visited.

Mr. Harris' farm, which lies a little north of Mr. Lee's, also contains a small pond, which is constructed in the same way at almost *no* cost, as the work was done when the men on the farm had nothing else to do. This pond is supplied by a small stream, and contains pike and other fish, which have been placed in it. A moderate supply of fish can, at any time, be obtained from this pond. Some sixty tons of ice can be obtained from it in the winter time, and the children and hands occasionally bathe in it in the sum-

mer. The same stream which supplies it is used to water the cattle when they are in the vicinity.

Mr. Jno. Delafield, formerly a distinguished banker in the city of New York, has on the east side of Seneca Lake, what is considered a model farm, and obtained the prize for the best conducted farm in the State of New York. In a very interesting conversation which I had with him, I learned many facts, both in connection with the use of ponds, and other matters connected with farming. He has a pond which covers about an acre of ground, and constructed in the usual way. An embankment thrown across between two ridges, cuts off small spring streams, dries the land below, and forms a pond which is used for, at least, four purposes.

Good fish are cultivated in it, and a good supply of them can be had for the table. Mr. D. informed me that he always had fish *once a week, and frequently twice a week, for his hands.*

It does to water the cattle and sheep, and also for them to bathe in.

A sheep-fold near, and the statement of Mr. D. himself assured us that it was used to wash sheep in in the spring of the year, previous to shearing. This, in fact, was the business on hand when we visited him—the men were shearing the sheep.

In the winter time it supplies the farm and vicinity with ice.

It may seem strange that Geneva, and the neighbouring farms should depend upon these ponds for ice; but it will not seem so when it is recollected that the Seneca Lake, which is about forty miles long, and two to three miles wide, *never freezes.* It is a spring lake.

Dr. Spence, who resides near the head of Seneca Lake, informed me that he has a pond of about an acre in extent, which he first formed merely as a bathing place for his family and men. This he now uses as a fish-pond, of which he says he has a full supply, and as an ice pond. The fish which he now has are pike, eels, and catfish. He says the trout cannot be kept where the pike are, because the latter destroy them, and many other fish, in a short time.

The ponds in other parts of western New York are used chiefly as places to wash the sheep, of which the farmers raise a large number.

I would suggest, however, to those farmers that the sheep need not be placed *in* the pond, but a small enclosure might be dug out, and boarded round on the lower side of the pond, where the stream from the pond might be made to fall upon the sheep; and where the water might be just deep enough to cover the back of the animal. They would thus save their fish-ponds from the disturbances necessary to washing several hundred sheep; for those who have no ponds have to send their sheep to those who have, to have them washed.

In conclusion, Mr. Editor, I have only to say, that the subject is not yet exhausted, but might be drawn out in a variety of other relations, to the well-being of the farmer. But having only for my object the supply of good fish, for the table of the farmer, I think I have shown that it can be done with *no* expense after the first construction of a pond.

JAMES BRYAN, M. D.,

Professor of Institutes and Medical Jurisprudence, in Philadelphia College of Medicine.

We have rarely had the satisfaction to publish anything more worthy of note, than the preceding essay. How easy would it be for thousands in the interior to turn its suggestions to practical account. The chub-fish makes a good tenant of the fish pond.—*Edit. P. L. & A.*

THE ROCKY MOUNTAIN GOAT RECOMMENDED TO BE DOMESTICATED AND ADDED TO OUR WOOL-BEARING ANIMALS.

THE examination and description of the pile of the Mazama (Raf:) Americana, the Rocky Mountain Goat of Harlan and Schintz.

Specimens presented by Professor Samuel S. Haldeman.

This pile is of two kinds, one longer and coarser than the other.

The general appearance of the first is of lamb's hair—of the second, of the under coat of the poodle dog.

The first is in length about four inches, but it appears to have been *cut*, not drawn out of the skin of the animal. Shape, eccentrically elliptical,

depressed in the centre, tapering from the inferior to the superior extremities. The diameters of four filaments, taken in three places of each:

No. 1. $\frac{1}{237}$ by $\frac{1}{416}$ $\frac{1}{281}$ by $\frac{1}{500}$ $\frac{1}{297}$ by $\frac{1}{562}$ of an inch.
2. $\frac{1}{237}$ " $\frac{1}{781}$ $\frac{1}{281}$ " $\frac{1}{625}$ $\frac{1}{266}$ " $\frac{1}{1250}$ "
3. $\frac{1}{237}$ " $\frac{1}{625}$ $\frac{1}{281}$ " $\frac{1}{625}$ $\frac{1}{266}$ " $\frac{1}{1250}$ "
4. $\frac{1}{250}$ " $\frac{1}{625}$ $\frac{1}{266}$ " $\frac{1}{562}$ $\frac{1}{264}$ " $\frac{1}{500}$ "

Color white; direction straight, but undulated; ductility, elasticity and tenacity:

With 170 grains one inch, stretched $\frac{3}{90}$ths of an inch, elasticity entire.
220 " " " " $\frac{7}{90}$ " " "
270 " " " " $\frac{12}{90}$ " minus $\frac{3}{90}$
320 " " " broke.

Fracture abrupt; shaft composed of three parts, viz: 1st, A cortex which is white and too thin to be measured. 2d, A black, fibrous band, of the thickness of $\frac{1}{1250}$ of an inch. 3d, A white opaque, granular centre, which has a fleecy appearance. Apex sometimes abrupt, but mostly pointed: none furcated. Transverse sections or disks exhibit plainly, the shape and three parts above enumerated.

When a filament is crushed, the fibres readily separate. They have a diameter of $\frac{1}{650}$ of an inch, but may be divided into fibrils of from $\frac{1}{2500}$ to $\frac{1}{5000}$ of an inch. The central matter, which oozes out from the interior, is white, opaque, and granular; the grains of an irregular and heterogeneous shape; the smallest less than the $\frac{1}{10,000}$ of an inch.

The small pile.—Length $1\frac{6}{140}$ inch, shape oval, diameter from $\frac{1}{1572}$ to $\frac{1}{1875}$ of an inch. The shaft consists of three parts, like the first described, but the cortex is comparatively thicker. It is undulated and slightly frizzled; no furcations.

Ductility, elasticity, and tenacity.

With 12 grs., one inch parted with its undulations and elongated $\frac{2}{90}$ths of an inch.

With 25 grs. one inch stretched $\frac{3}{90}$ths, elasticity entire.
35 " " " " 4 " "
45 " " " " 8 minus $\frac{1}{96}$th of an inch.
55 " " " " 14 " 5 "
65 " " " " 20 " 8 "
75 " " " " 26 " 13 "
85 " " " broke.

Scales upon the cortex 3500 upon one inch of length.

Remarks:—From the eccentrically elliptical shape of the long kind, it ought to be crisped and frizzled; the cause of the deviation is, probably, the *peculiar shape*, being thicker at the two extremities and thinner in the centre of the ellipse. Its deficiency in strength is, doubtless, owing to the small quantity of fibre, in comparison with the granular matter of the centre. The hair of His Excellency, General George Washington, with a diameter of $\frac{1}{3}\frac{1}{1}\frac{1}{2}$ by $\frac{1}{3}\frac{1}{0}\frac{1}{0}$, broke with a weight of 1120 grains only, this with 320!

The small pile is fine and strong, and has a large number of scales on the cortex; wherefore, we would think that the Mazama might prove a valuable addition to the fleece-producing animals now domesticated. The pile would probably improve by the care and attention that our farmers would bestow upon the animal.

P. A. BROWNE.

THE WHEAT FLY.

We take great pleasure in giving a place in our journal to the following interesting letter from the talented Miss M. H. Morris to P. A. Browne, Esq., upon the wheat fly:—

Dear Sir:—If I mistake not, the wheat insect which you so kindly sent, will prove to be the Cecidomyia tritici, that pest that has for so many years ravaged the wheat fields of Canada, Maine, New York, New Hampshire, and Massachusetts, but has never until now, been observed in our State. It is needless for me to enter into its history, as volumes have been already written describing it in all its forms. A notice of its appearance here I think important, as some means may be taken to prevent its spreading; or if no good end be answered, it will be a curious state in its history.

The fly is not yet developed, and if it be the Tritici, it will not be likely to appear until the middle of next June, when the grain will be in the milky state—at least such is its out door history; but what it may do, shut up in a box or bottle, is more than I will even conjecture. These are the first that I have ever seen in their larvæ and pupæ state. but they agree so closely with the description of the C. tritici in Harris' work on insects, that I have little hesitation in naming them.

I have long wished to procure them, and am most grateful to you for the valuable contribution to my collection. Yours respectfully,

M. H. MORRIS.

To P. A. Browne, Esq.,
Germantown, 14*th August*, 1850.

Extract of a letter from Prof. S. S. Haldeman to P. A. Browne, upon the wheat fly.

Columbia, Pa., 9th August 1850.

My dear Friend,

"I am much obliged to you for the infected head of wheat. The orange colored objects between the layers have been kept for nearly a month without producing anything. I have never met with the *Cecidomyia tritici* of Kirby, but am very confident that these pupæ belong to it. They are not enclosed in a hard follicle resembling flaxseed, like the *C. destructor* or *Hessian fly*.

You have consequently *three* species of these destructive flies in the vicinity of Philadelphia, namely:

1 *C. destructor, Say*, the Hessian fly.
2 *C. tritici, Kirby*, the wheat fly.
3 *C. culmicola, Morris*, the straw fly.

The first is found between the base of the leaf and the culm or stem; the second in the head; and the third within the culm. My *C. robiniae*, in conjunction with *odontota scutellaris*, have destroyed the foliage of nearly all the locust trees in this vicinity. I have found *C. robiniae* as far as the State of Mississippi.

Respectfully yours, S. S. HALDEMAN.

PEAT CHARCOAL MANURE.

To the Editor of the "Mark Lane Express."

SIR—You challenged me to give public proof that *peat charcoal* possessed the power of deodorizing excretory matter, the admixture to produce "*an inoffensive manure capable of being transported by any conveyance, and of being used with the drill.*"

I met the challenge; and in your paper of Oct. 8, 1849, you obligingly stated that I had "fairly won the thanks and honour of my fellow men."

Permit me to say I now challenge you.

Your position gives you the power of having tested, in a manner perhaps beyond the reach of others, the real value of this combination as a manure. Neither you nor the world will, nor perhaps should, believe my *individual* statement, that "*peat charcoal manure*" is the most valuable that has yet been produced. Still, I AVER THAT IT IS, and I seek for proof to the contrary.

I now place at your disposal 12 sacks (3 cwt. each) of this manure.

The charcoal to produce this combination has been manufactured under my direction for "THE IRISH AMELIORATION SOCIETY," the admixture made in London: 6 sacks contain equal parts in weight of *general excretory matter* and charcoal, the remaining 6 equal parts of peat charcoal and urine.

Pray place this in the hands of six different persons to test each kind against guano or any other manure they please.

First, I seek comparison for one season; next, that the test be extended to THREE or even FOUR withoul renewal.

I feel assured you will select those of eminence in agriculture who will take the trouble of making the test fairly, and who will fully report results.

I have the honour to be, Sir,
Your faithful servant,
JASPER W. ROGERS.

We have on hand some very valuable information on the subject of *peat charcoal* as a manure, which will doubtless be very acceptable in regions productive of peat. We believe it is destined to be esteemed one of the most valuable resources for the farmer ever yet discovered, and can promise some illustrations highly interesting in support of this impression; all we want is *opportunity and space* to bring them out.—*Edit. P. L. & A.*

GUANO.—As a great deal of interest is felt at this time, by farmers and planters, relative to the probable supply and price of this article, for their fall use, we deem it our duty to endeavour to keep them advised upon the subject, as far as our means of information will permit. In our last, we mentioned that five vessels were expected from the Coast of Peru before the 1st of October. Three of these have since arrived, viz.: 1st. The J. G. Coster, with 500 tons, one-half of which was landed at New York, and the other half was received at this port. 2d. The Kirkland, at this port, with 400 tons, 200 of which were landed here, and 200 tons sent to Washington, D. C. 3d. The Jane Parker, arrived at this port, but her whole cargo was sent to Alexandria. The 4th, with 300 tons, will arrive at this port about the 1st Sept., and the 5th, the Persian, is expected early in this month (Aug.) with 700 tons, 100 of which will be landed here, 150 at Petersburg, and the balance of the cargo at Richmond, Va. These, we are induced to believe, are the only vessels which will be likely to reach the United States before the 1st of Oct., without an extraordinary good voyage is made.

Price of Peruvian, $47 and 48 per short ton.—*American Farmer.*

P. S.—Since the above was published, the price of Guano has risen in the Baltimore market. Doctor Davis went there about the middle of August, with a friend from the neighbourhood of Dover, Del., and offered to take 70 tons, and to give $50, but could not engage it for less than $55 the short ton, that is 2000 pounds.

THE NEXT EXHIBITION OF THE CHARITABLE MECHANICS' ASSOCIATION is to come off at Faneuil Hall, Boston, on the 20th of this month. The Editor of *"The Plough, the Loom, and the Anvil,"* has been honoured with, and has accepted an invitation to deliver the Annual Address on the occasion.

It would be a fearful undertaking for men of small stature to tread where such as Governor Everett, and other distinguished sons of the old Bay State, have gone before; for in the march of intellect, such men take giant strides, and nothing could reconcile us to follow publicly in their wake, but that now, after their learning and eloquence have explained the philosophy, and culled and wreathed all the flowers of imagination that belong to the subject, a sedate and thoughtful people may be the better content, with an humble essay to make some plain suggestions for the improvement of the mechanic arts and *useful industries of the country.* For that cause it has been our inclination, not to say instinct, to labour all our life; and now that we are in the "down hill" of it, we are contributing to it more than $4000 annually—the hard earnings of personal industry—leaving it to those who regard the labour of the country as a *national concern,* to say how far our effort shall succeed, through the agency of a journal which is spreading its doctrines from Nova Scotia to California; and which, for that great end, we would distribute gratuitously if we could afford it. But it is no more than fair—to which we trust none will object—here to proclaim, that it is not until the expenses above-named have been *met and paid,* that anything remains for the editor. Would our patrons but *show* their numbers to their neighbours, we would be content to abide the result; but one great obstacle to its success is, in spreading a knowledge of the *existence and the nature of a new work like this!* How different is the case with journals depending on town support and supporting town interests! In strict reference alone to the communication of his able correspondents, the editor does not hesitate to say, that there is not a friend of American industry and development in the Union, who, if he *will read it,* will not be repaid for his outlay in a *single number* of "The Plough, the Loom, and the Anvil"—nor is there one such, who ought not to feel himself, in some sort, under an obligation, as Governor Trimble of Ohio, and many others have said *and done;*—to *interest himself in extending its circulation!*

As to these great Annual Exhibitions of the Mechanic Arts at Boston, we doubt not the truth of the declaration, in a report of the Committee on Agricultural Implements at their fifth celebration, wherein they say—

"There has never been made in this Commonwealth, any effort for the "promotion of the Mechanic Arts, which has been so beneficial, and successful "in glorious results, as the Exhibitions which THIS ASSOCIATION have so "patriotically established and ably conducted."

We have only room to add, that we shall preserve on our pages the report of the Committee on *Agricultural Implements* at this next Exhibition; and in the meantime wish it every success, commensurate with its laudable designs and objects.

FREE TRADE.—As exemplifying our present tariff policy, it is worthy of being remarked that the importations into this country for the year ending 30th June, 1850, will amount to upwards of $200,000,000, while it is doubtful whether our exports will reach within $50,000,000 of that sum. Such has been the excess of imports over exports, that, notwithstanding the large amount of our National, State, and Railroad stocks which has gone abroad, specie is now being exported in addition. So the system works, and will work, until it is changed, or the nation rendered bankrupt.

Never mind! Let us still go on, says the free trade advocate, to sell in the highest and buy in the lowest market, be that where it may. Ah, we are a great nation, worthy to be called the—*great humbugged!*

For "The Plough, the Loom, and the Anvil."

HORTICULTURAL MEMORANDA FOR SEPTEMBER.

Every month of the year has its peculiar interest to those who are engaged in horticultural and agricultural pursuits. The current month, with many, is considered comparatively one of leisure. There are, however, several imperative duties to be performed; for, if neglected, the benefits of the garden for the next six months would be measurably lost.

In the early part of the month sow *early Dutch cauliflower* on a very rich piece of soil, to produce plants to be planted into cold pits or frames, either to grow permanently or to protect only from severe cold till they are planted out early next spring to head in the open ground. Manure the ground well, dig it deep, break the soil fine, and sow therein, raking in the seed evenly and gently, press the soil (after raking) with the back of the spade. If the weather is dry give occasional waterings. The plants will appear in eight days. If they are attacked with the black beetle dust them in the mornings with air-slacked lime, plaster, or wood ashes.

About the 12th to the 25th sow *early York cabbage* seed, to produce plants for Spring planting or to plant out in October where they are intended to head; also *early Dutch or butter lettuce*, the white *butter* head for the Southern States, the *green butter* head for the Middle States. In the Northern States they must be *boxed* or, in other words, put into cold frames, where they will be protected with sash or shutters, or both, according to the severity of climate. Sow *corn salad* in drills half an inch deep and nine inches wide. The *broad leaved* is the best variety for cutting during Winter and early Spring. Sow *coleworts* early in the month in the Southern States to plant out in November to produce small cabbages in Winter and early Spring.

Select the largest and best formed *onions* to plant out for seed. One hundred roots will give one pound of seed. Plant them nine inches apart and eighteen inches from row to row. Sow a few *black winter radish.*

Sow *round leaved spinage*, for an early Winter supply, in rows one foot apart. When the plants are up thin them out from four to six inches from plant to plant. Thin out turnips from six to eight inches apart. Hoe them deep and keep them clear of weeds. If in the field use the cultivator freely. Swedes' should be ten to twelve inches apart. Make new plantations of rhubarb in very deep, rich ground, strongly manured. The old roots can be divided into six or eight pieces, and planted with their crowns three inches under ground. The *early red* and *Victoria* are the two best, the former for its earliness, and the latter for its size. One stalk, if extra well-grown, will weigh two pounds, and be fully three feet long. For pies, preserves, and jellies, the rhubarb has become a very popular plant. Cover the bed during Winter with four to six inches of manure.

Where there are fruit trees to be planted this fall, *now is the time to prepare the ground thoroughly*, by trenching and manuring. It is astonishing to see the difference of the growth of trees on ground properly prepared from those planted in the ordinary soil. As a manure, any well decomposed vegetable matter, of whatever description, is suitable. Half a peck of leached wood ashes to each tree, properly incorporated with the soil, is an excellent stimulant for the growth of the pear and the apple. Among the multiplicity of names of fruits published by authors and nurserymen, it is a very dubious task to make a selection—not over one in ten of them being worth culture for quality or market purposes. We give a selection of a few kinds that will not fail to be acceptable if even treated with mediocrity.

Apples.—Early Bevan, Early Strawberry, Early Harvest, Bough, Summer Pearmain, Rambo, Fall Pippin, Winter Pearmain, Bellflower, Gravenstein, Spitzenburg, Baldwin, Rhode Island Greening, Newton Pippin, and Roxbury Russett. These will be in eating from July to June of the next year and mature in or nearly in the order they are named. Trees budded or grafted on seedlings should have the preference. Have the roots very carefully lifted, and do not allow them to be exposed to the sun in time of removal.

Pears.—Madeline, Bloodgood, Tyson, Flemish Beauty (should be gathered from the tree before it is fully ripe and keep it a few days before eating), Rostiezer, Washington, Bartlett Seckel, White Doyenne, Duchess de Angouleme, Louis Bon de Jersey, Kingsessing, Beune de Aremberg, Vicar of Wakefield, Lawrence, Passe Colmar, and Winter Beune.

These will be in eating from July to April, and will mature in nearly the above rotation. We consider that pears generally are preferable on the quince stock. They come earlier into bearing, are not so subject to disease, and require less room to grow, and they will on the same space of ground produce as much fruit. In the above list, the Washington and Seckel pears are best of the pear stock. The importance of a

copious supply of fruit for home use or that of sale is every year more evident. The culture of pears being now so well understood that the sorts will generally produce fruit, if on the quince, the third or fourth year from the bud, and in less than five years they will pay the cost and yield a profit, if carefully collected and sold in any market of the United States.

The Editor of "The Plough, the Loom, and the Anvil," will be much obliged to any friend who will give him a plain, clear essay on root-grafting the pear and other fruit, manner and time of performance, objects to be attained by it, &c. The management of the pear, in the South and the North, is believed to be as different as possible. In the South, a pear tree is left to attain great height and size, does not, we believe, bear for many years after being planted, and is considered to be very precarious and difficult to be raised, and withal an uncertain bearer, and a short-lived tree; yet there are *some* very old trees, planted by the *ancestors* of the present generation. The best pear, except perhaps the Seckel, that we remember to have eaten, was that of a single tree growing in our grandmother's garden *fifty years ago.* It was a rather small, or perhaps middle-sized, bell-shaped, very juicy, sweet, and high-flavoured pear, brown on one side and pale green on the other. The Editor remembers several fruits, particularly apples, in her orchards, of a delicious sort that he has never met with elsewhere. But she was a woman *with a mind and character of her own!* illustrating in her life and maxims some of the noblest virtues. Query, if there be any falling off in the males of the present day, is there not yet more in the females? Was there or was there not something in the times and requirements of the Revolutionary period that brought up the character of our ancestors to a high pitch, from which, under the enervating influences of national security, ease, and luxury, we have fallen back a peg or two? We only ask for information.

We should be grateful for a brief essay on the culture of the pear from some member of the Massachusetts Horticultural Society—what says Colonel Wilder, or General Dearborn, or Mr. Walker, or Horace Dodge?—What height does the grafted pear attain there, what distance planted, and what is considered a fair quantity from a tree? Answers to these will surprise our Southern friends, or we are mistaken!—*Editor P. L. and A.*

FINE WOOL AND FINE MUTTON GO TOGETHER.

PHILADA., 13*th August*, 1850.

DEAR SIR—You seemed, in our conversation this morning, to think that I contended too much for the wool without regarding the mutton, and did not appear to appreciate my answer, that in the care and attention required to produce fine wool good mutton would necessarily be produced. I did not expect so soon to send you the highest authority for my opinion, but turning over the leaves of the book you loaned me, I find the following passage of Mr. Elman: "It is the opinion of many that sheep which produce fine wool are finer and better in the meat than those of coarse fleeces, and this I think is borne out by the fact of fine wooled sheep selling at better prices per pound in the market, on account of their mutton giving greater satisfaction to the customers."

Yours, truly,

J. S. SKINNER, Esq. P. A. BROWNE.

We are aware that, according to the common observation of gentlemen in the country, made when merinos were first introduced in this part of the country, at great cost, a cross upon the merino was thought to give mutton of finer grain and better quality for nice judges.—*Ed. P. L. & A.*

☞ It is stated in the *Pittsburgh Ledger*, that all the cotton factories in Allegheny have suspended operations in consequence of the glutted state of the market. This turns about 800 persons out of employment.* How much of the forty millions of revenue collected under the tariff of '46 will it take to repair this great loss to the poor and to the country? —*Butler Democrat.*

THE OLD AMERICAN FARMER has mounted another high feather in its cap, by the engagement of Edmund Ruffin as a regular contributor to its pages.

We have always regarded and spoken of Mr. Ruffin as among the ablest contributors to the cause of agricultural improvement that we have ever known—far more so than some who have run after popularity, while he has left popularity to follow—careless whether it did or no.

* And sends them to raising agricultural produce, as the rival of the farmers, instead of buying it, as their customers, at once increasing the quantity to be consumed, and lessening the ability to consume it. Ah! we are a wise people!—*Ed. of P. L. & A.*

The Plough, the Loom, and the Anvil.

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THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

The chapters that will remain to be published, under the above head, are designed to show how protection affects Peace—the Exchanger—Woman—Morals—the Intellectual Condition and the Political Condition of Man,—how it affects Credit, individual and national—Revenue—Expenditure—the Government—and, finally, how it affects the Nation—concluding with observations on the true "mission" of the United States.

We know not how it may have been with our readers, but, for ourselves, having no obstinacy of opinion or self-sufficiency to conquer, and seeking the truth only for truth's sake, we are ready to acknowledge that we have obtained from these letters a clearer and more satisfactory conception of the influences that affect the condition and welfare of society—national interests and duties—than we had before derived from all our reading, political and metaphysical. And then the great and attractive beauty of the system these letters advocate consists, in our mind, in its close adherence to the principles of private benevolence and morality. Mr. Carey's whole theory, in fact, shows how trade or commerce, beginning in the interchanges of good offices in families, neighbourhoods and communities, gradually extends itself over a whole country, embracing last of all (and least worthy of care) that commerce which is carried on between different nations with each other. Just as the circle, expanding on the bosom of the lake, becomes less and less palpable as it recedes from the point of concussion, until it finally subsides and dies away, so does commerce naturally diminish in importance and in its claims on the care of government, in the ratio of the distance that separates the exchangers; for, as Mr. Carey clearly demonstrates, while such trade demands for its transaction more of the machinery of transportation, it diminishes the power of producing the things to be exchanged. Having established these principles, the way is open to an easy understanding of the true policy of every people; and all we have further to say is, to express our individual regret that this great truth had not been revealed to us when, more than thirty years since, we commenced to inquire and to lecture on the means of agricultural improvement; for in this doctrine, as we believe, is to be found the only key that will open the way to the agricultural and general prosperity of nations. It is directly opposed to the system called "free trade," and the world has to choose between them. This is the struggle that is really going on, whatever may be the names of parties or organizations of men.—*Ed. P. L. & A.*

CHAPTER SEVENTEENTH.

HOW PROTECTION AFFECTS THE CURRENCY.

If protection be "a war upon labour and capital," it must tend to produce those disturbances of the currency that tend so greatly to diminish the return to both. If, on the contrary, it be a peaceful measure of resistance to a system tending to the oppression of the labourers and capitalists of the world, then it must tend to produce that steadiness of the currency so desirable to all, labourer and mechanic, farmer and planter, ship-owner and merchant.

The real currency of the world consists of labour and the things for which men are willing to give labour, food, clothing, fuel, iron, &c. That which is usually denominated "currency," is merely the standard by which their respective values are measured. The labourer sells the exertions of a week for five dollars, and he receives in return five bushels of wheat, also valued at five dollars. The capitalist sells a house for twenty thousand dollars, and orders the purchase of a quantity of shares of stock which, measured by the same standard, are found to be the equivalent of that number of dollars.

The price of wheat changes with the size of the crop. So does that of

sugar. If the supply of wheat be large, and that of sugar small, much wheat will be given for little sugar.

The introduction of a third commodity, itself liable to variation in the supply, as is the case with money, tends to produce additional variations in the quantity of one commodity that must be given for another. Thus, if the supply of money be large among one set of wheat raisers, and small among another, the raiser of sugar will sell in the first and buy in the last, obtaining much money from the one and giving little to the other.

Were all arrangements for the production, purchase, or sale of commodities or property executed on the instant, this cause of disturbance would scarcely exist, because the prices of all would be similarly affected, being high when money was plenty, and low when it was scarce, and the quantity of sugar to be given for wheat, or wheat for sugar, would depend upon the size of the crops almost as completely as if no intermediate commodity were used. Such, however, is not the case. The merchant buys coffee in January, and contracts to deliver its equivalent in money in July, at which time money may be so scarce that six pounds of coffee will command no more than would have been done in January by four pounds. The merchant commences to build a ship in July, when money is scarce and the price of labour is low, and he finishes it when money is plenty and wages are high, and it costs him ten, fifteen, or twenty per cent. more than he had calculated upon. The little trader, on the contrary, who buys and sells from day to day, loses nothing. If he buys high he sells high, and if prices are low to buy, he makes them low to sell, and the measure of his business is the measure of his profits.

The great sufferers by such variations are those the nature of whose property, or the character of whose business, requires them to make arrangements far ahead, and to take the risks incident to changes in the currency for the whole period that elapses between the commencement and the conclusion of an undertaking. Such are all the persons the products of whose labour are not intended for immediate consumption—the owners of houses, farms, factories, furnaces, railroads—all, in fact, connected with the improvement of land. In a time of pressure for money in one place, flour, cotton, cloth, and other articles intended for daily consumption, may be transferred to other places where money is plenty, and the changes in their prices are therefore small when compared with those which are experienced by the possessors of property that cannot be transferred, and is therefore obliged to bear the whole burden of the change. In such cases land becomes entirely unsaleable except at an enormous reduction of price, to which its owners must submit if they are placed in a position to render sales necessary, and thus it is that so many persons connected with land and its improvement are ruined by revulsions that affect but in a slight degree the operations of the retail grocer.

Such, likewise, is the case with labour. The man who has a family and finds no demand for his labour cannot change his locality. He and his family must suffer together. Food may be at a *low money-price*, but if he can obtain no employment, *the labour-price* is so high that he cannot purchase it. Land and labour, then, are specially interested in the maintenance of uniformity in the standard by which the products of both are measured, because they are the great sufferers by the changes which occur in the progress of time.

Time and distance are, in this respect, the equivalents of each other. The man who builds a house calculates upon the continuance, during the period of its erection, of the state of things that existed at its commencement, and he who remits to China to purchase teas, bases his calculations on the state of affairs that existed in that country three months previously. If money in

the mean time has become more abundant, he may pay higher for his teas than he had calculated upon, and if before their arrival it becomes less abundant here, he will obtain less, and thus will reap loss instead of profit. The man who raises cotton when he might have raised sugar or wheat, bases his calculations on the state of affairs that he supposes will exist in a foreign country, and is thus forced to superadd the risks of distance to those of time. If he exchanged his products with his neighbour, both would be subject to the same variations, so far as the currency was concerned. If money were less abundant, flour, sugar, pork, cloth, and iron would feel its effects precisely as cotton felt them, and though he might obtain less money, he would have precisely the same quantity of the commodities for the purchase of which he required to have money. The proximity of the consumer and the producer tends, then, to lessen the difficulties resulting from changes in the currency by which land and labour are always the chief sufferers.

The object of the colonial system was that of compelling the farmers and planters of the world to make their exchanges in a distant market, and thus to *increase the time* within which such risk must be borne, *adding thereto* all those which result from *distance*. When the Hindoo exchanged his cotton on the spot for cloth, the prices of cotton, cloth, and labour were governed by the same circumstances, for the exchanges were made on the instant. To make his exchanges now, two years' time are required, and he is, during all that period, subject to the risk of changes like those which have marked the years 1847 and 1848. His pursuit is rendered one of mere gambling, without the advantage of holding his own cards, although bound to pay the losses.

All the losses he and his fellow-planters *do pay*, as will be seen by those who will study out the working of the system. The cotton, the wool, the sugar, and the food of the world are sent to England for exchange. Her people buy and sell on the instant, the time that is required to elapse between the purchase of the wool and the sale of the yarn not exceeding a single week. If yarn fall, so does cotton. If cotton rise, so does yarn. The whole loss from changes of currency resulting from time and distance is thus thrown upon the planter. The whole gain resulting from the diminution of the risks of both goes to the proprietor of the small and easily transported spindle, the cost of which is as nothing when compared with the cost of the great machine required for producing the wool.

The nation that thus desires to compel all the other nations of the world to bring to her their products, that they may there be measured by her standard, ought to be able to show that it is one the length, or the contents, of which must, under any and every circumstance, remain unchanged. The standard of weight and that of length are fixed and unchangeable. So should be that of value. Far, otherwise, however, is it. The control of that great and important standard for the measurement of the values of the world is placed in the hands of the bank of England, the directors of which have proved their utter incompetency for the important business delegated to them by bringing the institution, at four different periods within the last thirty years, within the jaws of bankruptcy. Their object is to make large dividends, and, to accomplish that object, money is, as it is called, made plenty; that is, the directors overtrade largely, and thus block up the capital of individuals who find themselves compelled to take from the bank evidences of debt (certificates of deposit) not bearing interest, when they would have preferred other evidences bearing interest, and would have obtained them at reasonable prices had not the bank commenced to overtrade. With every increase of this indebtedness, called deposits, the bank considers itself richer and overtrades further, until at length speculation is produced, railroads are made, ships and houses are built, and then the day of settlement

arrives, when the bank crushes everybody in the effort to save itself. The standard of value shrinks to half, and the owner of fixed property finds himself ruined, while the planter obtains threepence where he had looked for sixpence, and the farmer is brought in debt for charges on his food where he had looked to realize a dollar a bushel.

The man of England, who buys cotton and sells yarn or cloth, suffers little from those changes. On the appearance of the first sign of change, he shortens his hours of work, or diminishes the number of his hands, and then, when the time for it arrives, he closes his mill. His work-people are thus, in whole or in part, deprived of wages, and rendered unable to purchase food or clothing, the consequence of which is diminished demand and reduced prices for both, and thus are all the losses thrown upon the farmers and planters of the world, who are ruined by the necessity for dependence on a country which desires to establish for itself a monopoly of machinery for the supply of iron and for the conversion of wool into cloth, with all of which they might supply themselves *at less cost than is now imposed upon them in each and every year.*

It is usual to attribute the disasters of the period from 1836 to 1842 to derangements in our currency, proceeding from erroneous action at home; but those who examine more carefully will find that they were themselves effects resulting from other causes, as I propose now to show.

It is usual to talk of capital as money; but money is only the standard by which commodities are measured, and a very small quantity of the one suffices to measure a large quantity of the other. The same dollar may be used a thousand times in a week, each time acting as the standard by which labour, flour, cotton, sugar, &c., have been measured. The man who has sold a cargo of sugar has acquired a credit with somebody by aid of which he may obtain a cargo of flour. The borrower from a bank has acquired a credit which he transfers to his neighbour, and that neighbour transfers it to a third, who divides it among his workmen, and by its aid they obtain food, clothing, and shelter.

Whenever the daily demand for labour and its products is equal to the daily supply, the rate of interest, or the price of capital seeking investment, will remain stationary, to the great advantage of the owners of landed and other fixed capital. Whenever, by reason of any cause whatever, the daily demand is less than the daily supply, the accumulation of unemployed capital begins. There are fewer houses built, and the consequence is, that there is less demand for labour, the price of which falls, and the power to consume food and clothing is diminished. The demand for iron and cotton is lessened, and furnaces and mills cease to be built, and the power to consume food and clothing is thus still further diminished. With each step in this progress, there is a tendency to the accumulation of unproductive capital. One man has it in the form of iron, another in that of cloth, a third in that of labour, and a fourth has it in the form of a debt due to him by a bank which pays him no interest. By degrees the iron and cloth pass off to be consumed, and, as their owners do not desire to reinvest the proceeds, they take a further credit on the bank, which still pays no interest. In this manner capital is blocked up, deposits accumulate, the rate of interest necessarily falls, and the prices of existing securities rise.

With this rise comes a desire to create more investments similar to those which still continue to pay interest, and there is a rush to seize on those supposed to possess greater advantages than others. Speculation begins, and prices run up rapidly. Having reached the zenith, the downward course begins. Thenceforward the progress is rapid, and fortunes disappear in a mo-

ment, leaving not even "a wreck behind." The capitalist, after having been for a long time deprived of interest, now loses the capital itself.

By the laws of 1832 and 1833, railroad iron, French merchandise generally, linens, and other commodities, were freed from duty. Some descriptions of woollen manufactures were reduced to ten per cent., and a general reduction was established, commencing in 1833, and increasing biennially thereafter, until there should be reached a uniform rate of 20 per cent.

The passage of these laws diminished the demand for capital to be employed in the making of iron. As they came gradually into action, there was a diminution in the tendency to build mills. In place of producing iron and cloth, we bought them on credit. Capital accumulated, and the prices of dividend-paying stocks rose. Next, companies were established for making railroads, and States made roads and canals, for which the iron and cloth were bought on credit. The difficulty of employing capital in the East caused it to seek investment in the South and South-west, there to be employed in the making of banks and roads, and there to be sunk for ever. The day of payment came. The iron and cloth had been used, and the certificates of debt given in exchange for it were abroad. The banks were heavily in debt to the persons whose capital had accumulated in their hands, and not being able to pay they had to stop, and thus commenced a period the most disastrous to the labourers and the owners of capital fixed in land, houses, and roads, that the country has ever seen.

An examination of the tables I have furnished will show that, during this period, the productive power of the country was stationary. Capital was in demand for distant speculation, but for little else. Houses, ships, factories, mills, furnaces, and all other of the modes of investment by which value is given to land, felt the effect equally, and thus, while the labourer suffered in the diminution of wages, the land-holder suffered in the diminished value of land. Had the roads and canals of 1835 to 1839 been based upon home-made cloth and iron, they would have produced unmixed good; but being made with *borrowed* cloth and *borrowed* iron, they were accompanied by a general deterioration of condition throughout the community, resulting in the disgrace of bankruptcy and repudiation.

By those who will trouble themselves to look below the surface, it will readily be seen that the state of things here described is precisely that now existing, and that the process at present going on is the same that brought ruin eight years since. Companies obtain large quantities of English iron upon securities that would not be received in this country, and when the day of defalcation shall come, as come it must, the cry of American bankruptcy will be as rife throughout Europe as it was but five years since. Scarcely a week elapses that does not bring with it a notice like the following, *and yet the quantity of iron consumed is less than when it was produced at home, and paid for in labour that is now being wasted.*

"The agent who went to England, to purchase iron for the Great-Western Railroad of Illinois, has returned in the Cambria, with proposals to furnish the whole quantity required for the road from Cairo to Chicago, receiving in payment the six per cent. sterling bonds of the Company, payable in London."

Capital is said to be abundant, and interest is low—for those who have unquestionable securities. The reason is, that the natural outlets for capital are closed.* Iron is superabundant, and furnaces are not built. Coal is superabundant, and mines are not opened. Cotton cloth is superabundant, and mills are not built. Ships are superabundant, and the building of ships,

* It would be nearly impossible to find a mode of investment tending to produce demand for labour, in which capital could be profitably employed, and hence it is that there is so universal a demand for bank charters.

brigs, and schooners, is diminished. We are buying on credit the cloth and iron we should be making, while the labour and capital that should be employed in their production seek in vain for employment. The heavy sufferers are, and are to be, labour and land. The broker takes his usual shave for the notes which pass through his hands, and the grocer charges his usual cent per pound on sugar, but the furnace is closed, and with it the demand for food and labour—the mine is abandoned, and the miner suffers from want of clothing—the constructor of railroads obtains no dividend, and the desire to make roads as an investment of capital has passed away, and with it the demand for labour, food, and clothing. By degrees, the same results must be experienced by every interest of the nation. The return to labour is diminishing, and the value of land, houses, ships, railroads, and every other species of property, is dependent on the extent of that return—rising as it rises, and falling as it falls.

The nearer the consumer and the producer can be brought to each other, the more perfectly will be the adjustment of production and consumption, the more steady will be the currency, and the higher will be the value of land and labour. The object of protection is to accomplish all these objects, by bringing the loom and the anvil to take their natural places by the side of the plough and the harrow, thus making a market on the land for the products of the land.

Of all the commodities in use by man, there are none that contribute so little to his comfort or convenience as gold and silver. They are useless for the clearing or draining of lands, the building of houses or mills, or the construction of ships or railroads. They can be neither eaten, drunken, nor to any extent worn. Nevertheless, of all they are the two whose arrival and departure are most carefully chronicled.

Ten furnaces and rolling-mills, capable of producing in a year three millions of dollars' worth of iron, may close without producing even a passing remark from a newspaper, but no vessel can arrive or depart, with fifty thousand dollars in gold, without the arrival being noticed in half the papers of the Union.

The factitious importance thus given to the precious metals is one of the effects of the colonial system, which demands that all the commodities of the world shall be brought to one market, there to be submitted to one standard. Its effects at home have been to make every man a seller of almost all he produces, and a buyer of almost all he consumes.* "In our social system," says the accomplished traveller, Mr. Laing,† "every man buys all he sells, and sells all he produces. The very bread of our labourers," he continues, "is often bought at the manufacturer's shop." The system has converted a large portion of the little occupants into hired labourers, receiving from six to nine shillings a week,‡ and occupying poor houses in poor villages, where

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* "The evil of our economical system is, that too many of us live by wages. When masters suffer, the servant starves. When wages stop, he has nothing to fall back upon. When he would eat, he has every thing to buy—and, wages stopped, where has he to buy with? But the seed-time and harvest of the spade husbandman never fail him. He may lose a crop, but something is still left. When the slug takes his patch of wheat, he can kill him, or thrust in cabbages, or barley, or vetches, or something. The cow will yield her milk, whether ports are open, or discounts are raised. Take labour out of the market, and wages rise—the great body of consumers possess better means of payment, and manufacturers and tradesmen flourish by cheap food and better wages. The farmer is relieved in his rates, and the landlord gets a better rent for his land."—*The Mother Country, by Sidney Smith.*

† Notes of a Traveller, page 152, American edition. ‡ See pages 113—117, *ante.*

they are compelled to waste much of the time that would, under a different one, be employed with infinite advantage to themselves and others.*

The man who exchanges directly with his neighbour food and labour for coal or iron, has little need of money. He exchanges labour for labour, and if the account do not adjust itself, it is frequently balanced by the transfer of the difference to the credit of another, and thus is there established in every community in which men combine their exertions, a sort of *clearing house*, quite as effective in its operations as the celebrated one of London.†

The man who sends his cotton to Liverpool or Lowell, trades altogether for money. He desires to know how much gold he can have for a bale, and how much iron he can have for a pound of gold. He uses machinery with which the others can dispense.

Whatever tends to increase the quantity of machinery required for the accomplishment of a given effect, tends to increase the friction and augment the power required for its accomplishment. Such is the case here. The *necessity* for using gold tends to introduce a new and powerful cause of disturbance in the operations of the planter, and greatly to augment the cost of them, thus increasing the friction and diminishing the effect. Gold and silver are reduced in weight by abrasion, and *for all this loss the producer and the consumer pay.* The exchanger pays nothing. He lives at their cost.

Twenty-five years since, we thought much of gold or silver, for we were

* "One principal cause of the extraordinary productiveness of land, under the management of small occupiers, is, that all or most of the cultivators are directly interested in the success of their labour; they work for themselves, and consequently with an ardour which cannot be expected from hired labourers. Every farmer might, however, make his servants almost equally zealous in his cause by altering the mode of remunerating them. If, instead of being paid a fixed rate of wages, they were entitled to a certain proportion of the crops, they would strive to make the crops as abundant as possible. * * * Nothing more is wanting to cure over-population than to make people comfortable, and to make the continuance of their comforts dependent on themselves."—*Thornton on Over-population.*

† Such are "the protective societies" established in New England, in which workmen supply themselves with the various commodities required for their consumption. They desire to dispense as much as possible with the services of the exchanger, as common sense would teach all men to do. I take the following paragraph, illustrative of this movement, from one of the journals of the day:—

"Mr. Kaulback, the purchasing agent of the several protective unions in New England, has paid for the purchase of goods for the quarter ending January 1, 1850, the sum of $102,000, being an increase of some $23,000 over the previous three months. This is an important branch of trade that has recently grown up among us, the more so as it is a cash business, no credit in any case ever being asked for. There are now in active operation 109 union cash stores in New England, nearly all stocked by the above-named agent."—*Boston paper.*

One of the most remarkable cases of combination of action is now going the rounds of the newspapers. Captain Geo. Kimball determined to build a ship in a remote district of Maine, and there, "alone, a company of one, without capital, in a forest, at a distance even from deep water, he commenced his noble enterprise. He was soon joined by a single man, in a few weeks others followed; women contributed provisions, and the farmers sent in cattle which were exchanged for materials for ship-building. The novelty of the undertaking attracted adventurers from a distance, and experienced shipbuilders and joiners arrived to give their strength and skill to the work. All who aided in the enterprise, whether men, women, or children, received their proportionate share in the ship. In April last the work was commenced, and in November she was launched, a splendid ship of more than six hundred tons burden, and christened the 'California Packet.' She is now in Boston with her passengers on board, those who built and own her, and to whom she is now a home. We need not say that the men and women who compose this company are specimens of our New England population, to whom we can refer with pride."—*Boston Transcript.*

then obliged to export them. Under the tariff of 1828, we imported them, and then they were little the subjects of thought. Under the Compromise, there came a demand for so much coin that we became bankrupt, and then came a rage for gold. Under the tariff of 1842, we imported much gold, and the idea ceased to occupy the public mind. Under the tariff of 1846, we have exported much, and have run largely in debt, preparatory to a demand for gold. When that shall come, it will again be sought for as it was in 1842.

Among the evidences of the wastefulness of the existing system may be found the rage for increasing the number of places at which gold is to be weighed and marked—called mints. The mint neither adds to the quantity nor improves the quality of the thing that is minted, and yet it is now proposed to spend six or eight hundred thousand dollars in making an addition to the number of buildings in which this work is to be performed, although there are now far more than are needed for the work that is to be done. The object in view is the saving of freight and interest. Were the government to receive bullion in New York, paying for it at full price, and then to transport it at its own cost back and forth, the freight and interest would not amount to half as much as the salaries of the officers, and were the same capital applied to the building of furnaces, it would erect as many as would *produce* as much iron as would pay for more than half the gold and silver coined in the year 1848, the amount of which was $4,450,000. It is time that the planters and farmers of the Union should look to these matters for themselves, for they it is that have to suffer by the waste of capital.

Striking evidence of the diminishing power of the people of Great Britain and Ireland to obtain the comforts and conveniences of life, may be found in the following statement of the quantity of gold and silver plate, including, of course, spoons, forks, and other articles of daily use, stamped at the following periods:

Year.	Population.	Gold-plate ounces.	Silver-plate ounces.	Value of bullion per head.
1801—10	17,000,000	5,471	1,015,147	6½ cents.
1810—29	21,000,000	6,926	1,209,616	6½ "
1839—47	28,000,000	7,011	1,118,550	4·45 "

The last thirty years have witnessed the passage of a series of laws tending to compel the people to use more gold and silver; yet, with the extension of the system, their ability to be customers to the men who mine those metals has declined almost one-third. The market of the miner is diminishing as well as that of the planter.

With the diminution of the *necessities* of man there is a constant increase of his *powers*. The furnace and the mill diminish his necessity for going to the distant market, while giving him roads by which to seek it at his pleasure. The ship brings immigrants to eat the food and wear the cotton, and the freight received from them tends largely to diminish the cost of sending food and cotton to distant lands. So is it with gold. The nearer the consumer and producer can be brought together, the less is the *necessity* for it, and the greater the *power* of obtaining it. The tendency of the tariff of 1846 is to increase the *necessity* for it and diminish the *power* of obtaining it, because it tends to diminish the value of both land and labour.

SHEEP HUSBANDRY IN THE UNITED STATES.

We have repeatedly adverted to the value of the work on Sheep Husbandry, written at our instance, by Col. Randall of Cortland Village, New York. In urging him to undertake it, we were prompted by a high and just appreciation of the growing importance of a great branch of national industry, and of his peculiar qualifications for exposing it in all the lights and details in which it imports the American sheep-breeder to view it.

To be possessed of the best information on every great agricultural topic, we need not say should be the pride, not only of those who have capital embarked in that particular business, but of every gentleman who is ambitious to be familiar with the leading points and principles of the various branches into which his pursuit is ramified.

Some trouble among the printers, with the merits of which we are not familiar, has not only compelled us to postpone a very complete treatise on plank roads, but may, we apprehend, cause some delay in the appearance of this number. That apprehension, and an engagement to attend a great industrial exhibition, to come off to-morrow in Boston, impels us to "give out" thus early, (the 10th of the month preceding,) the matter for the October number; and to make surer of the work to be done, we have designated the article already stereotyped, on the WINTER MANAGEMENT OF SHEEP.

That the reader who may not have seen it may the better form an opinion of the extent and completeness of the work, we may remind him that this is but one out of seventeen chapters; each under a general heading, with specific details as is here seen. The whole embracing engravings, not only of all the principal races into which sheep have been divided, and the dogs employed in the care of them, but as many more as are necessary to illustrate, by diagrams, every branch of the inquiry. The general heads are as follows:—

Effects of Climate on the Health and Wool-producing qualities of Sheep.—Adaptation of the Soils, Herbage, &c., of the Southern States to Sheep Husbandry. 1. Of the Low or Tide-water Region. 2. Of the Middle or Hilly Zone. 3. Of the Mountain Region.—Profits of Sheep Husbandry in the Southern States. 1. Direct Profit on Capital invested. 2. As the Basis of Amelioration in Naturally Sterile and Worn-out Soils. 3. By giving to Southern Agriculture a Mixed and Convertible Character. 4. By Furnishing the Raw Material for the Manufacture of Domestic Woollens.—Prospects of the Wool Market.—Future Demand and Supply.—Breeds of Sheep in the United States.—The Most Profitable Breed of Sheep for the South.—Principles of Breeding.—Summer Management of Sheep.—Winter Management of Sheep.—Anatomy and Diseases of Sheep.—Diseases and their Treatment.—Sheep Dogs, Wool Depots, &c.

In considering the prospects of a particular branch of industry, and all enterprises that depend on the probable future demand for its products, we are too apt to overlook the *prodigious rate at which our population is going on to increase;* and that increase affects nothing with more certainty than the *wool interest* of the United States.

Finally, we must again express our surprise at the very limited demand there seems to be for a work of so much excellence, on one of our great divisions of national industry, especially when we consider that any one who will enclose a single dollar can have it sent to him, *postage paid,* to any part of the United States.

LETTER XIII.

WINTER MANAGEMENT OF SHEEP.

Use of Rams—proper age, number, &c.—selecting ewes for—different methods of coupling—way to treat rams...Division of Flocks for Winter...The Hospital...Yards—when necessary...Feeding-Racks—various plans of—the Box Rack—the Hole Rack—the Sparred Rack—the Hopper Rack—their respective advantages—improvements suggested...Troughs...Grain-Boxes...Barns and Sheds—necessity of shelter at the North—the common Northern Sheep-Barn...Stells—the Outside Stell—Ancient Stells—Inside Circular Stell—Circular Stell fitted up with racks...Tree-Coverts...Cheap Sheds—fitted between stacks, barracks, &c...Value of Barracks for the Preservation of Fodder...The Main Sheep-Barn of the Farm or Plantation, with Shearing-Floor, &c.—arrangements for breeding-ewes...Feeding sheep in yards with other stock—improper—reasons...Hay-Holders...Winter Dry Feed for Sheep—Variations in Feed—German views on this subject—proper kinds of fodder—Boussingault's Table of the Nutritive Equivalents of different kinds of Fodders...Effect of Food in the Production of Wool—De Reaumur's Table showing the Effects of Food in this particular...Effect of Food in producing Fat and Muscle...Fattening Wethers in the North...Feeding Grain to Store-Sheep in Winter—when practiced at the North—economy of so doing—kinds of grain preferred—necessity of regularity in quantity—difficulty of raising the condition of poor sheep in the winter...Feeding Roots, Browse, &c —Roots a Substitute for Grain—to what sheep they may be fed—Hemlock Browse—when and in what manner useful—substitutes for...Winter Feed of Breeding-Ewes...Necessity of regularity in the times of feeding sheep...Salt...Water.

Dear Sir: As the turning out of the rams usually takes place, here, on the first day of winter, I will describe the proper accompanying arrangements, as the first step in winter management.

Use of Rams.—The period of gestation in the ewe averages five months. Merino rams are frequently used from the first to the tenth year, and even longer. The lambs of very old rams are not supposed to be as vigorous as those of youngish or middle-aged ones, but where rams have not been overtasked, and have been properly fed, I confess I have been able to discover very little difference in their progeny on account of age. A ram lamb should not be used, as it retards his growth, injures his form, and, I think, permanently impairs his vigor and courage. A yearling may run with 30 ewes, a two-year-old with from 40 to 50, and a three-year-old with from 50 to 60. Some very powerful, mature rams will serve 70 or 80 ewes; but 50 is enough, where they *run with* the ewes. I am satisfied that an impoverished and overtasked animal does not transmit his individual properties so decidedly to his offspring as one in full vigor.

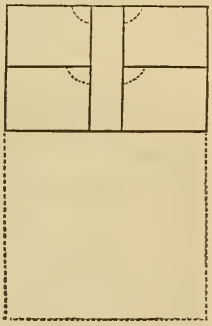
Several rams running in the same flock excite each other to an unnatural and unnecessary activity, besides injuring each other by constant blows. It is, in every point of view, bad husbandry, where it can be avoided, and, as usually managed, is destructive to everything like careful and judicious breeding. The nice adaptation which the male should possess to the female, already discussed under the head of Principles of Breeding—counterbalancing her defects with his own marked excellence in the same points, and, in turn, having his defects counterbalanced by her excellencies—how shall this be accomplished, where half a dozen or more rams are running promiscuously with two or three hundred ewes?

Before the rams are let out, the flock-master should have all the breeding-ewes brought together in one yard. He has carefully inspected his stock rams and noted every defect and peculiarity of their fleeces and forms. The breeding register is before him to settle every pedigree, provided his stock rams are nearly enough connected with some portions of the flock to render it necessary to guard against in-and-in breeding. The shepherd catches a ewe and places her before him. The pedigree being

determined, he first notes her form, and then opening the wool on the shoulder, thigh and belly, notes the length, thickness, quality, and style of the staple. If he kept the minutes at shearing recommended by me (under the head of "Selection") it will save much time and lead to far more accurate classification. When every point in the ewe is determined, he decides which ram, on the whole, is best calculated to perpetuate her excellencies both of fleece and carcass, and best counterbalance her defects in their mutual offspring. With a pigment composed of Venitian red and hog's lard, he then, as has been already mentioned under the head of Registering, gives the ewe a mark which will last until the next shearing, which will show by what ram she was tupped. Those selected for each ram are placed in *different* inclosures, and the chosen ram placed with them. In four weeks' time, the rams are withdrawn, and the flocks doubled or otherwise reärranged for winter, as may be necessary. This looks like taking considerable trouble, but having practiced it for years on my farm, and having always made these selections myself, I know that in reality the trouble is very slight—*nothing*, when the beneficial results are taken into consideration. With a couple assistants, to catch, a day would suffice for effecting the proper classification and division of several hundred ewes.

Where choice rams are scarce, so that it is an object to make the services of one go a great way—or where it is impossible to have separate inclosures, (as on farms where there there are a great number of breeding-ewes, or where the shepherd system is adopted to the exclusion of fences,) the following method may be resorted to. Build a hut containing as many apartments as you wish to use rams, with an alley between them. That part of fig. 30 which is surrounded by black lines represents the hut divided into four apartments, each furnished with a feeding-box and trough in one corner. Gates or bars open from each apartment into the alley, and at *each end* of the alley. The dotted lines inclose a yard just sufficient to hold the flock of breeding-ewes.

Fig. 30.



A couple of strong rams (of any quality) for about every hundred ewes, are then aproned, their briskets rubbed with Venitian red and hog's lard, and they are let loose among the ewes. Aproning is performed by sewing a belt of coarse sacking broad enough to extend from the fore to the hind legs, loosely but strongly round the body. To prevent its slipping forward or back, straps are carried round the breast and back of the breech. It is indispensable that it be made *perfectly secure*, or all the labor of this method of coupling will be far worse than thrown away. The pigment on the brisket should be renewed every two or three days—and it will be necessary, usually, to change the "teasers," as these aproned rams are called, about once a week, as they do not long retain their courage under such unnatural circumstances. Twice a day the ewes are brought into the yard in front of the hut. Those marked on their rumps by the teasers are taken into the alley. Each is admitted to the ram for which she is marked *once*, and then goes out at *the opposite end of the alley from which she entered*, into a separate field from that containing the flock from which she was taken. A powerful and vigorous ram from three to seven years old, and properly fed, can thus be made to serve from 150 to even 200 ewes, with no greater injury than from running loose with 50 or 60.

This, too, looks like a great amount of labor to attain the result sought, but having had it formerly practiced for two years on my farm, I know that when conducted with system, and by a prompt and handy shepherd, it consumes no great amount of time.

Rams will do better, accomplish more, and last two or three years longer, if daily fed with grain, when on service, and it is well to continue it, gradually decreasing the quantity, for a few days after they are withdrawn from the flock of ewes. A ram should receive the equivalent of from half a pint to a pint of oats, daily, when worked hard. They are much more conveniently fed when kept in huts. If suffered to run at large, they should be so thoroughly tamed that they will eat from a measure held by the shepherd. Careful breeders thus train their stock-rams from the time they are lambs. It is very convenient, also, to have them halter-broke, so that they can be led about without dragging or lifting them. An iron ring attached to one of the horns, near the point, to which a cord can be attached for leading, confining, &c., is very useful and handy. If rams are wild, it is a matter of considerable difficulty to feed them separately, and it can only be effected by yarding the flock and catching them out. Some breeders, in addition to extra feeding, take the rams out of the flocks nights, shutting them up in a barn or stable by themselves. There is no objection to this practice, and it is a great saving of their strength.

Rams should not be suffered to run with the ewes over a month, at least in the North. It is much better that a ewe go dry than that she have a lamb later than the first of June. And after the rutting season is over, the rams grow cross, frequently striking the pregnant ewes dangerous blows with their heavy horns, at the racks and troughs.

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Division of Flocks.—If flocks are shut up in small inclosures during winter, according to the Northern custom, it is necessary to divide them into flocks of about 100 each, to consist of sheep of about the same size and strength. Otherwise the stronger rob the weaker, and the latter rapidly decline. This would not be so important where the sheep roam at large, but even in that case some division and classification are necessary, —or, at all events *best*. It is best, indeed, as already stated, even in summer. The poorer and feebler can by this means receive better pasture, or a little more grain and better shelter in winter.

By those who grow wool to any extent, breeding ewes, lambs, and wethers are invariably kept in separate flocks in winter; and it is best to keep yearling sheep by themselves with a few of the smallest two-year-olds, and any old crones which are kept for their excellence as breeders, but which cannot maintain themselves in the flock of breeding-ewes.

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The Hospital.—Old and feeble, or wounded sheep, late-born lambs, etc., should be placed by themselves, if the number does not even exceed a score. They require better feed, warmer shelter, and more attention. But after all, unless the sheep are of a peculiarly valuable variety, it is better to sell them off in the fall at any price,—or to give them to some poor neighbor who has time to nurse them, and who may thus commence a flock.

—

Yards.—Experience has amply demonstrated, that in the climate of the Northern and Eastern States—where no grass *grows* from four to four and a half months in the winter—and where, therefore, all that can be obtained from the ground is the repeatedly frozen, innutritious herbage left in the fall—it is better to keep sheep confined in yards, excepting where the ground is covered with snow. If suffered to roam over the fields at other

times, they get enough grass to take away their appetite for dry hay, but not enough to sustain them; they fall away, and towards spring they become weak, and a large proportion of them frequently perish. I speak, of course, of flocks of some size, and on properly stocked farms. A few sheep, with a boundless range, would do better.

Some of our flock-masters let out their sheep occasionally for a single day, during a thaw; others keep them entirely from the ground until let out to grass in the spring. I prefer the former course, where the sheep ordinarily get nothing but *dry* fodder. It affords a healthy laxative, and a single day's grazing will not take off their appetite from more than one succeeding dry feed. It is necessary, here, to keep the sheep in the yards until the feed has got a good start in the spring, or they, particularly breeding-ewes, will get off from their feed, and get weak at the most critical time for them in the year.

Yards should be firm-bottomed, dry,—and they should, (in *this* climate,) be kept well littered with straw.

My impression is that the yarding system will never be practiced to any extent in the South. It certainly should not be, where sheep can get their living from the fields. How far, and under what circumstances, they will do this, has already been sufficiently discussed in my preceding Letters.

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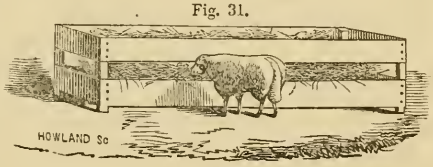
Feeding-Racks.—When the ground is frozen, and especially when covered with snow, the sheep eats hay better on the ground than anywhere else. When the land is soft, muddy, or foul with manure, they will scarcely touch hay placed on it. It should then be fed in racks.

These are of various forms. Figure 31 gives the common box rack, in the most general use in the North. It is ten feet long, two and a half wide, the lower boards a foot wide, the upper ones about ten inches, the two about nine inches apart, and the corner posts three by three, or three and a half by two and a half inches. The boards are spiked on these posts by large flat headed nails wrought for the purpose, and the lower edges of the upper boards and the upper edges of the lower ones are rounded so they shall not wear the wool off from the sheep's necks. The lower boards and the opening for the heads, should be two or three inches narrower for lambs. If made of light wood, as they should be, a man standing in the inside and middle of one of these racks, can easily carry it about—an important desideratum. Unless overfed, sheep waste very little hay in them.

Fig. 31.



BOX RACK.

A capital shed or barn rack is represented in the following cut. The

Fig. 32.

HOLE RACK.

holes are eight inches wide, nine inches high, and eighteen inches from center to center. Sheep do not crowd and take advantage of each other

so much with these as with box racks. But they would be too heavy and unnecessarily expensive for a common out-door rack. Fig. 32 represents a *box*, the front formed of a board nailed on horizontally, but they are usually formed by nailing the boards perpendicularly, the bottoms on the sill of a barn, and the tops to horizontal pieces of timber.

In the South, as in England, racks will not be so necessary for that constant use to which they are put in colder countries, as for *depositories* of dry food, for the *occasional* visitation of the sheep. In soft warm weather, when the ground is unfrozen, and any kind of green herbage is to be obtained, sheep will scarcely touch dry fodder—though *the little they will then eat will be highly serviceable to them.* But in a sudden freeze, or on the occurrence of cold storms, they will resort to the racks, and fill themselves with dry food. By an instinct beautifully illustrative of the providence of the Creator, sheep anticipate the coming storm, and eat an extra quantity of food to sustain the animal heat, during the succeeding depression of temperature. They should always have racks of dry fodder to resort to in such emergencies.

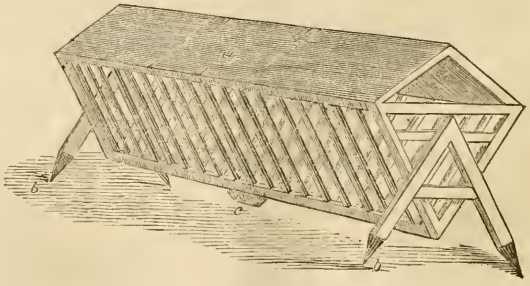
These occasionally used racks should have covers or roofs to protect their contents from rain, as otherwise the feed would be often spoiled before but a small portion of it was consumed. Hay or straw saturated with water, or soaked and dried, is only eaten by the sheep as a matter of absolute necessity. The common box rack (fig. 31) would answer the purpose very well by placing on the top a triangular cover or roof formed of a couple of boards, (one hung at the upper edge with iron or leather hinges so that it could be lifted up like a lid;) making the ends tight; drawing in the lower edges of the sides so that it shall not be more than a foot wide on the bottom; inserting a floor; and then mounting it on and making it fast to two cross sills four or five inches square to keep the floor off from the ground, and long enough to prevent it from being easily overturned. The lower side board should be narrower than in fig. 31, on account of the increased hight given its upper edge by the sills.

Still better, but somewhat more expensive, would be a rack of the same construction, with the sides like those of fig. 32.

Or, the sides might consist of rundles as in fig. 33. In either of the preceding, the top might be nailed down, and the fodder inserted by little doors in the ends.

The following form and description of an English rack is from the "Book of the Farm."*

Fig. 33.



SPARRED RACK.

"I have found," says Mr. Stephens, "this form convenient, containing as much straw at a time as should be given, admitting the straw easily into it, being easily moved about, of

* It will be found in the reprint of this splendid work, in The Farmers' Library, vol. ii., p. 449.

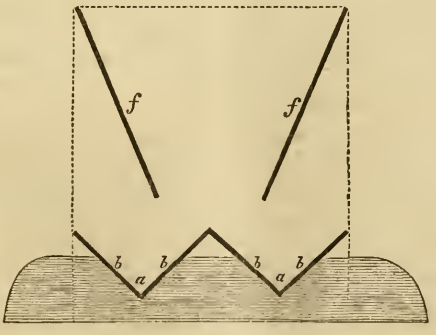
easy access to the sheep, and being so near the ground as to form an excellent shelter. It is made of wood, is 9 feet in length, 4½ feet in hight, and 3 feet in width, having a sparred rack with a double face below, which is covered with an angled roof of boards to throw off the rain. The rack is supported on two triangular-shaped tressels *b*, shod with iron at the points, which are pushed into the ground, and act as stays against the effects of the wind from either side. The billet *c*, fixed on the under or acute edge of the rack, rests upon the ground, and in common with the feet, supports it from bending down in the middle. The lid *a* is opened on hinges when the fodder is put into the rack. . . . . Such a rack is easily moved about by two persons, and their position should be changed according to a change of wind indicative of a storm."

I used racks formed of rounds (or "sparred") for several years, and found them decidedly *objectionable*. The sheep grasping a lock of hay in its mouth, brings the head to its *natural position*, and then draws in the *adhering* fibres in the process of mastication. But when eating from a rack, *it will not pick up the hay which it drops under foot.* In the box or hole racks (figs. 31 and 32) most sheep will not withdraw their heads from the openings, as they can there hold them in the ordinary position for mastication, and as, if they *step back* to do so, they are very liable to be crowded out of their places. The hay, therefore, is not drawn out of the rack, and if any is dropped, it falls within it and is saved. At a sparred rack, the sheep will not keep its nose between the rundles (in a horizontal or upward position) until it *detaches* a mere mouthfull of hay. It will, particularly when partly sated, *twitch out* its fodder prior to mastication, and all which scatters off and drops to the ground, is trampled under foot and wasted, except for the mere purpose of manure. A considerable loss will always result from this cause.

And there is another objection to this form of rack, particularly where it runs down to an acute edge on the bottom, as in fig. 33. The sheep frequently drawing the hay from the lower part, will shake down from above hay-seeds and chaff into the wool on their head and necks; and the wind will sometimes carry these as far as their shoulders and even their backs. As heretofore remarked, these cannot be washed out, and they materially lower the market value of the wool.

The following rack has been used and is highly approved by my friend, George Geddes, Esq., of Fairmount, N. Y., to whom I am indebted for the drawing and description of the cut. It serves both for a rack and feeding-trough.

Fig. 34.



THE HOPPER-RACK.

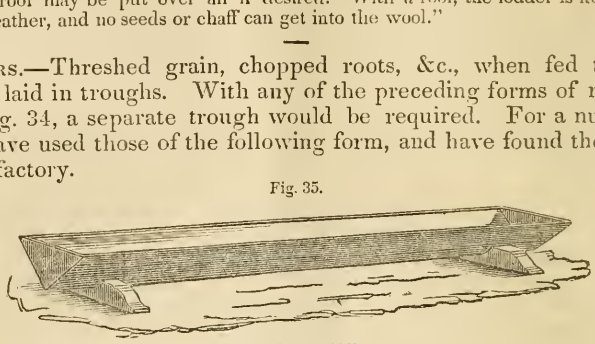
"The above is intended to represent a section of what I think the best sheep-rack I have seen.

"A piece of durable wood about 4½ feet long, 6 or 8 inches deep, and 4 inches thick, has two notches, *a*, *a*, cut into it, and two troughs, made of inch boards, *b*, *b*, *b*, *b*, placed in

these notches, and nailed fast, constitutes the foundation. If the rack is to be 14 feet long, three sills will be required. The ends of the rack are made by nailing against the side of the sill-boards that reach up as high as it is desired to have the rack, and nails driven through these end-boards into the ends of the side-boards *f, f,* secure them. The sides may be farther strengthened by pieces of board on the outside of them, and fitted into the trough. A roof may be put over all if desired. With a roof, the fodder is kept entirely from the weather, and no seeds or chaff can get into the wool."

TROUGHS.—Threshed grain, chopped roots, &c., when fed to sheep should be laid in troughs. With any of the preceding forms of racks, excepting fig. 34, a separate trough would be required. For a number of years I have used those of the following form, and have found them every way satisfactory.

Fig. 35.



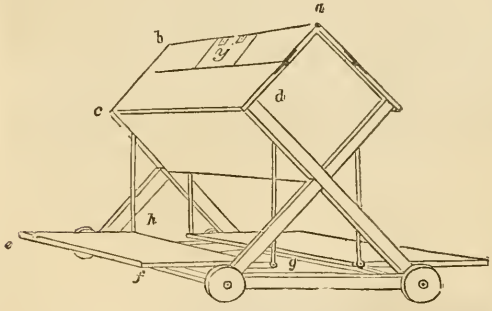
SHEEP-TROUGH.

One of the side-boards is usually about ten and the other eleven inches wide. The feet are commonly of two-inch plank, rising high enough on the sides to keep the sides of the trough firm in their places.

In our snowy climate they are turned over after feeding, and when falls of snow are anticipated, one end is laid on the yard fence.*

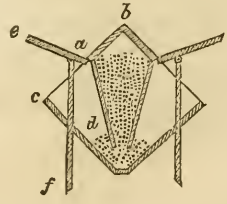
The following elaborately ingenious contrivance for keeping grain where sheep can feed on it *at will*, is from the "Book of the Farm," and I append the author's description of it.†

Fig. 36.



GRAIN BOX FOR SHEEP.

Fig. 37.



VERTICAL SECTION OF INTERIOR OF GRAIN BOX.

"There is a mode of preserving corn (grain) for sheep on turnips which has been tried with success in Fife. It consists of a box like a hay-rack, in which the grain is at all times kept closely shut up, except when sheep wish to eat it, and then they get it by a simple contrivance. The box *a b* contains the grain, into which it is poured through the small hinged lid *y*. The cover *c d* concealing the grain, is also hinged, and when elevated the sheep have access to the grain. Its elevation is effected by the pressure of the sheep's fore-feet upon the platform *e f*, which, moving as a lever, acts upon the lower ends of the upright rods *g* and *h*, raises them up, and elevates the cover *c d*, under which their heads then find admittance into the box. A similar apparatus gives them access to the other side of the box. The whole machine can be moved about to convenient places by means of

* To you, Sir, living on the ocean shore of South Carolina, and who, I think, have not visited the North, in the depth of winter, the idea of a farmer's finding the racks used by him the day before, buried under from eighteen inches to three feet of snow, and having to *dig them out*, may be rather an odd one! But, nevertheless, it is a matter of no *very* rare occurrence, at least at the lowest depth mentioned.

† See Farmers' Library, vol. ii., No. 10, p. 476.

four wheels. The construction of the interior of the box being somewhat peculiar, another, fig. 37, is given as a vertical section of it, where *b* is the hinged lid by which the grain is put into the box, whence it is at once received into the hopper *d*, the bottom of which being open, and brought near that of the box, a small space only is left for the grain to pass into the box, the hopper forming the grain-store, *a* is the cover of the box raised on its hinges by the rod *f*, acted upon by the platform *e f*, fig. 35; and, when in this position, the sheep put their heads below *a* at *c*, and eat the grain at *d*. Machines of similar construction to this have also been devised to serve poultry with grain at will."

I never have thought it best in feeding or fattening *any animals*, or, at all events, any quadrupeds, to allow them grain *at will*—preferring stated feeds; and the same remark is applicable to fodder. If this system is departed from in using depository racks, as heretofore recommended, it is because it is rendered necessary by the circumstances of the case. A Merino store-sheep, allowed grain *ad libitum*, would stand a chance to inflict an injury on itself, and I cannot but believe that grain so fed would generally be productive of more injury than benefit.

—

Barns and Sheds, &c.—Sheep barns and sheds, at the North, are frequently made very elaborate contrivances—particularly on *paper*. But expensive barns, with feeding-cellars and other arrangements for keeping sheep *within doors* during a greater portion of the winter, would, it strikes me, be entirely out of place in the South. Even in our rigorous climate, none but the breeders of Saxons pretend to make a regular practice of feeding under cover.

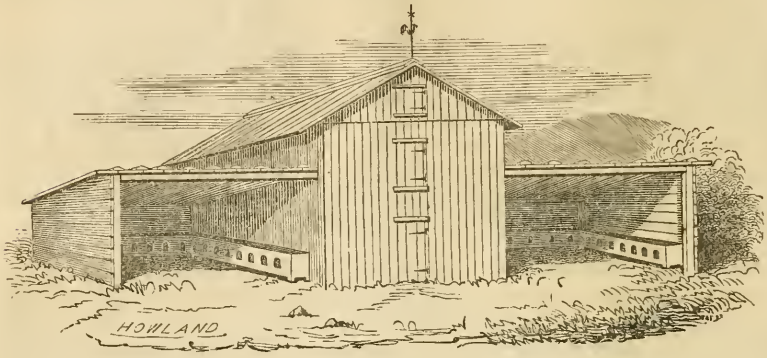
Humanity and economy both dictate, here, that sheep be provided with shelters to lie under nights, and to which they can resort *at will*. In our severe winter storms, it is sometimes necessary, or at least by far the best, to feed under shelter for a day or two. It is not an uncommon circumstance in New-York and New-England, for snow to fall to the depth of 20 or 30 inches within 24 or 48 hours, and then to be succeeded by a strong and intensely cold west or north-west wind of two or three days' continuance,* which lifts the snow, blocking up the roads, and piling huge drifts to the leeward of fences, barns, &c. A flock without shelter will huddle closely together, turning their backs to the storm, constantly stepping and thus treading down the snow as it rises about them. Strong, close-coated sheep do not seem to suffer as much from the cold, for a period, as would be expected. But it is next to impossible to feed them enough or half enough, under such circumstances, without an immense waste of hay —entirely impossible, without racks. The hay is whirled away in an instant by the wind, and even if racks are used, the sheep leaving their huddle where they were kept warm and even moist by the melting of the snow in their wool, soon get chilled and are disposed to return to their huddle. Imperfectly filled with food, the supply of animal heat is lowered, and at the end of the second or third day, the feeble ones have sunk down hopelessly, the yearlings and oldish ones have received a shock which nothing but careful nursing will recover them from, and even the strongest have suffered an injurious loss in condition.

Few holders of more than 40 or 50 sheep now attempt to get along here without some kind of shelters. The following (fig. 38) is a very common form of a Northern sheep-barn with sheds. The sheds front the south, or, what is a better arrangement, one fronts the east, and the other, being turned to a right angle to the direction of this, fronts the south. I have represented hole racks, as in fig. 32, running round the sheds, as, although not yet in general use, they are undoubtedly the best in such sit-

* These terrible wind-storms are of much longer continuance in many parts of New-England.

uations. The sheds are not usually framed or silled,—but are supported by posts of some durable timber set in the ground. The roofs are formed of boards "battened" with slabs. The barn has no partitions within, and is entirely filled with hay.

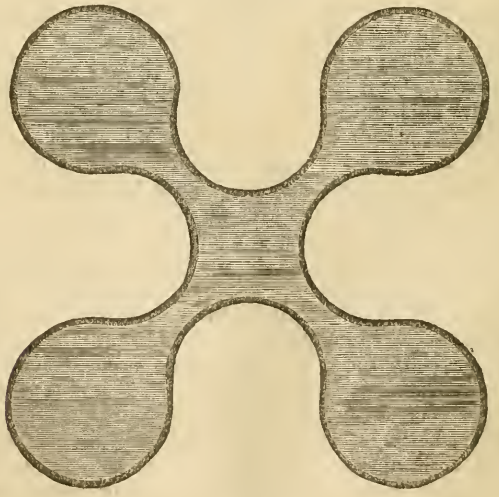
Fig. 38.



SHEEP-BARN.

There are many situations where these open sheds are very liable to have snow drifted under them by certain winds, and they are subject in all cases in severe gales, to have the snow carried *over* them to fall down in large drifts in front, which gradually encroach on the sheltered space, and are very inconvenient—particularly when they *thaw*. I therefore much prefer sheep-houses covered on all sides, with the exception of a wide door-way for ingress and egress, and one or two windows for ventilation when it is necessary. They are convenient for yarding sheep, for the various processes where this is required, as for shearing, marking, sorting, "doctoring,"

Fig. 39.



THE OUTSIDE STELL.

&c., and especially so, for lambing places or the confinement of newly shorn sheep in cold storms. They should be spacious enough, so that in

addition to the outside racks, others can be placed temporarily through the middle when required.

In many parts of Scotland, "Stells," as they are called, are made use of to shelter sheep. Fig. 39 on the preceding page is the form of one given in "The Book of the Farm," and the author's description of it:

"In a storm, their provender cannot be given to the sheep upon snow, safely and conveniently, as ground-drift may blow and cover both; and no place is so suitable for the purpose as a *stell*. . . . . It may be formed of planting or high stone-wall. Either will afford shelter; but the former most, though most costly, as it should be fenced by a stone-wall. Of this class I conceive the form represented (fig. 38) a good one, and which may be characterized as an *outside* stell. . . . . The circumscribing strong black line is a stone-wall six feet high; the dark ground within is covered with trees. Its four rounded projections shelter a corresponding number of recesses embraced between them, so that let the wind blow from what quarter it may, two of the recesses will be always sheltered from the storm. The size of this stell is regulated by the number of sheep kept; but this rule may be remembered in regard to its accommodation for stock, that each recess occupies about ¼ part of the space comprehended between the extremities of the 4 projections; so that in a stell covering 4 acres—which is perhaps the least size they should be, every recess will contain ½ an acre."

The two following are forms of stells, composed of stone-wall, without planting.

Fig. 40.

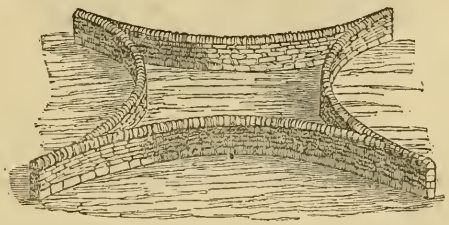
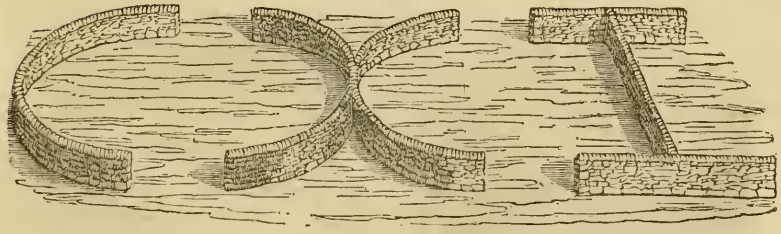


Fig 41.



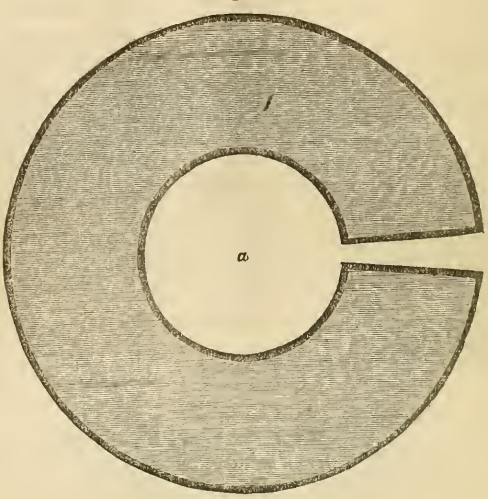
ANCIENT STELLS.

Figures 42 and 43, on the following page, are forms of circular stells, the first made by stone-walls and planting, as in fig. 39. The open space *a* is occupied by the sheep, and *b* is a funnel-shaped opening to it.

On the whole I should consider fig. 42 preferable to any of the preceding forms. Figure 43 represents one of the same form, but without the planting, with a stack in the middle, &c. Either of the stells which are formed in part of trees, would be convenient in severe winds, would form excellent shades in summer, and would constitute highly ornamental objects on the farm, and in the landscape. On the most northerly of the Southern mountains, where considerable snow falls, they might even be good contrivances for winter shelter. They might also be convenient on the lowlands farther south, provided the shelter of evergreens could be made dense enough to protect the sheep from the winter *rains*. In this case, the stell or covert might be of any shape, and ought to have no cen

tral opening. It would be merely a dense clump of evergreen trees, for the sheep to take refuge under in storms of rain, and it might be surrounded on the outside with a tight board fence or stone-wall, if much exposed

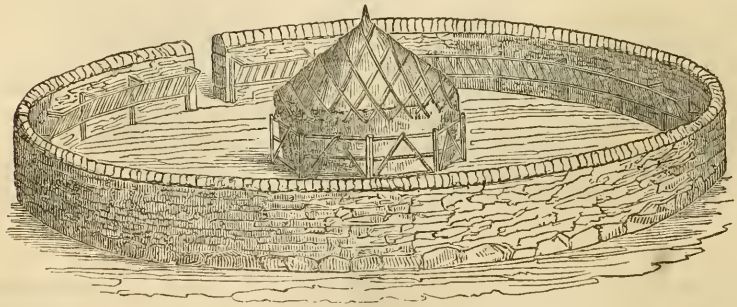
Fig. 42.



THE INSIDE CIRCULAR STELL.

to the sweep of cold winds. As the sheep would lie among the trees, a clump 50 or 60 feet in diameter—though 100 feet would be better—would suffice for 100 sheep.

Fig. 43.



THE CIRCULAR STELL FITTED UP WITH HAY-RACKS.

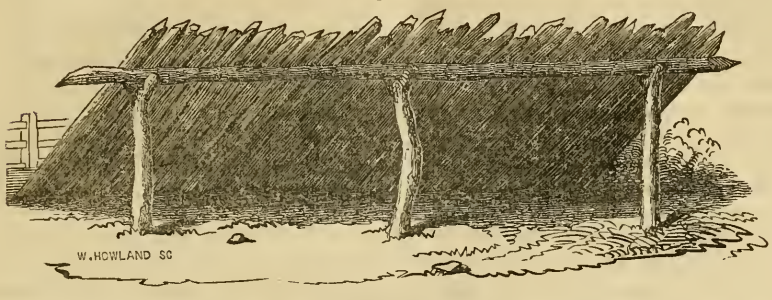
But in determining upon the best winter shelters, for the various regions in the South, the fact must not be lost sight of that *cold rains*, or rains of any temperature, *when immediately succeeded by cold or freezing weather, or cold, piercing winds,* are more hurtful to sheep than even snow-storms—and that consequently sheep must be adequately guarded against them. There must also be suitable shelter from *any* storms to which the country is subject, *in the lambing season.* Any person with the least experience can determine whether an inclosed clump of trees will answer these purposes, in his own immediate region.

I think it very probable that in the Gulf States, and some of the lower Atlantic ones—particularly in regions near the ocean—these tree coverts,

surrounded by fences to break the winds, would be found sufficient. In sections infested with wolves, they might also be made to answer for *folds*, by carrying the fence to the requisite hight, to bar the ingress of the wolf. But farther north, and on the high lands and mountains, better shelters would, I am inclined to think, in the end, be found more economical.

The simplest and cheapest kind of shed is represented in the following cut (fig. 44). It is formed by poles or rails, the upper ends resting on a strong horizontal pole supported by crotched posts set in the ground. It may be rendered rain-proof by pea-haulm, straw, or pine boughs.

Fig. 44.



SHED OF RAILS.

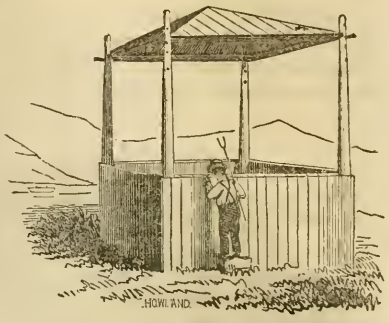
In a region where lumber is very cheap, planks or boards (of sufficient thickness not to spring downward and thus open the roof) battened with slabs, may take the place of the poles and boughs; and they would make a tighter and more durable roof. If the lower ends of the boards or poles are raised a couple of feet from the ground, by placing a log under them, the shed will shelter more sheep.

These movable sheds may be connected with hay-barns, "hay-barracks," stacks, or they may surround an inclosed space with a stack in the middle like fig. 43. In the latter case, however, the yard should be *square*, instead of *round*, on account of the divergence in the lower ends of the boards or poles, which the round form would render necessary.

Sheds of this description are frequently made, in the North, between two stacks. The end of the horizontal supporting pole is placed on the stack-pens, when the stacks are built, and the middle is propped by crotched posts. The supporting-pole may rest, in the same way, on the upper girts of two hay-barracks; or two such sheds (at angles with each other) might form wings to this structure. The "barrack," as it is provincially termed in the North, would, it strikes me, afford a most economical and a most convenient way of storing fodder in the South. It is easily movable, so that it possesses the same advantage that stacks do, in manuring different parts of the field or farm. On the other hand, the fodder cannot be drenched by a winter rain, as in a partly fed out stack. Hay can be more rapidly stored in it than on a stack at any time, and you can pitch into it to the last moment, when threatened with rain, without stopping to round up the top as is necessary in a stack. The outside is not weather-beaten and damaged, as is the case with the sides, and frequently with a considerable of the top of a stack. Fig. 45 (on the next page) represents the form of a barrack. It is 12 feet square on the bottom, and the frame is formed by girting together four strong poles, 16 feet long, at the bottom, and 6 feet from the bottom. Boards 6 feet long are nailed perpendicularly on the girts. Two-inch holes are bored at convenient distances through the corner poles, so that the roof, which rests

on pins thrust through these holes, can be raised or lowered, at pleasure. It is occasionally lowered as the fodder gets lower in the barrack, so that rain or snow shall not drive under it. It seems to me that this structure would be remarkably well adapted to the storing and feeding out of unthreshed peas, which, as has been remarked in a former Letter, are so advantageously raised at the South, and constitute so admirable a feed for sheep.

Fig. 45.

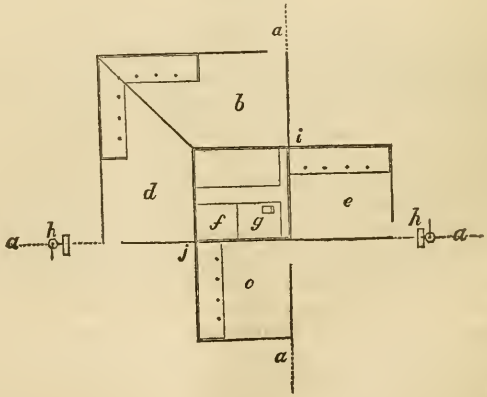


BARRACK.

On all large sheep-farms convenience requires that there be one barn of considerable size, to contain the shearing-floor, and the necessary conveniences about it for yarding the sheep, &c. This should also, for economy, be a hay-barn, (where hay is used,) and from its necessary size (for the shearing-floor), it should hold hay for 400 sheep. It may be constructed in the corner of four fields, so that four hundred sheep can be fed from it, without making improperly sized flocks. At this barn it would be expedient to make the best shelters, and to bring together all the breeding-ewes on the farm, if their number did not exceed 400. Thus the shepherd would be saved much travel at all times, and particularly at the lambing-time, and each flock would be under his almost constant supervision.

I offer the following ground-plan of a barn with fixtures, &c., as one which I think will be found well adapted to the purpose above specified. The upper is the north part of the plan.

Fig. 46.



The dotted lines *a*, *a*, *a*, *a*, are the fences dividing four fields, which would corner at the south-east corner of the barn. The barn is surrounded by double lines, and the sheds by double lines on the backs and ends—the dots in front of them, representing the crotched posts supporting their front. The single black lines round the yards, represent tight board fences, which screen the four yards *b*, *c*, *d*, *e*, from every wind. There are two pumps and troughs at *h*, *h*, which accommodate the whole four fields, if a want of springs or streams in them render these necessary. The sheds are so ar-

ranged that even without the screens they entirely shut out the north and west winds—the prevailing and severe winter ones of *this* region—and if other ones are more prevalent in other regions, the sheds can be changed accordingly. Each of the sheds is 50 feet long and 12 feet wide—six square feet being the smallest *proper* allowance of sheltered area for each sheep. The barn is 48 feet square, a floor 13 feet wide running east and west through the center, for shearing and for the drawing in of hay. An alley 4 feet wide and 8 feet high (boarded up on the side toward the mow, and covered at the top) cuts off the lower part of each bay from the east wall of the barn. This is for carrying hay into the yards *b*, *c*. It is carried into the yards *d*, *e*, from the large doors at each end of the shearing-floor (or from smaller ones cut through them.) The south bay is represented as divided by a temporary fence, cutting it into two pens *f*, *g*. The outside inclosure *c*, for yarding the sheep, communicating by a door with *f*, and *g* being used as a room to tie up wool in, presents precisely the same arrangement which is exhibited in the cut of the shearing-barn (fig. 22) in Letter XII.

The barn here given (fig. 46) is probably larger than would be necessary for 400 sheep, in most parts of the South. Its necessary size is a question to be entirely determined by the climate. For large flocks of sheep, I should regard the storage of *some* hay or other fodder for winter as an indispensable *precautionary* measure, at least, in *any* part of the United States; and, other things being equal, the farther north, or the more elevated the land, the greater would be the necessary amount to be stored.

The shearing-floor shortened to 30 or 35 feet, would still, perhaps, be sufficiently commodious, and this would reduce the dimensions of the barn east and west 13 or 18 feet; and one of the bays might be dispensed with. But having constructed so large, so smooth, and so tight a barn-floor as the shearing one ought to be, it would be good economy to use it for the threshing of grain. One of the bays, therefore, might be used for the storage of grain in the sheaf. I have always considered this an excellent arrangement in a *Northern* barn of this description, as in our cold climate the sheep require much straw litter in their sheds, yards, &c. Thrown out to them daily, as threshed, much bright straw and chaff will be consumed by them—particularly of greenish cut oats.

The yards *c*, *e*, in fig. 46 are represented but the width of the barn, 48 feet. If these were reduced too much, by diminishing the size of the barn, the shed of *c* could be carried farther west at *j*, and that of *e* farther north at *i*, being connected with the barn by wind-breakers, composed of a tight board fence, as high as the summit of the sheds. Or, what would perhaps be better, the fences thrown forward in a straight line from the *ends* of these two sheds might be continued until they intersected each other, and a fence from their point of intersection to the south-east corner of the barn would divide the two yards.

—

Feeding Sheep with other Stock.—Sheep should not run or be fed, *in yards*, with any other stock. Cattle hook them, often mortally. Colts tease and frequently injure them. It is often said that "colts will pick up what sheep leave." Well-managed sheep rarely leave anything—and if they chance to, it is better to rake it up and throw it into the colts'yard, than to feed them together. If sheep are not required to eat their feeds pretty clean, they will soon learn to waste large quantities. But if sheep are overfed with either hay or grain, it is not proper to compel them by starvation to come back and eat it. They will not unless sorely pinched. Clean out the troughs,—or rake up the hay, and the next time feed less.

HAY-HOLDERS.—Where hay or other fodder is thrown out of the upper doors of a barn into the sheep-yard, as it always must necessarily be in a barn constructed like fig. 38, or any *mere hay*-barn, or where it is thrown from a barrack or stack, the sheep immediately rush on it, trampling it and soiling it, and the succeeding forkfulls fall on their backs, filling their wool with dust, seed and chaff. This is avoided by hay-holders—yards 10 feet square—either portable by being made of posts and boards, or simply a pen of rails, placed under the doors of the barns, and by the sides of each stack or barrack. The hay is pitched into the holder, in fair weather enough for a day's foddering at a time, and is taken from this by forkfulls and placed in the racks. I would here offer a necessary caution in relation to the use of *rails* or *poles*, for stack-pens or hay-holders. The poles should be so small as to entirely prevent the sheep from inserting their heads between them after hay. A sheep will often insert its head where the opening is wide enough for that purpose, shove it along or get crowded along, to where the opening is not wide enough to withdraw the head, and it will hang there until observed and extricated by the shepherd. If, as it often happens, it is thus caught when its fore parts are elevated by climbing up the side of the pen, it will continue to lose its fore footing in its struggles, and will soon choke to death.

WINTER DRY FEED FOR SHEEP.—The proper dry winter fodder for sheep has already been repeatedly alluded to, in general terms. Volumes have been expended on this subject, particularly in Germany—and curious and elaborate systems of feeding given. In Germany great stress is laid on *variety* in the winter fodder. In the German Farmer's Encyclopædia, the following table of the proper variations and amounts of feed is given by PETRI.

TABLE 15.

Day.	Lbs.	Loth, equal ½ oz.	Morning.	Lbs.	Loth, equal ½ oz.	Noon.	Lbs.	Loth, equal ½ oz.	Evening.
1		21	hay		21	hay		21	hay
2	1	1	rye straw	1	22	hay	1	1	rye straw
3		23	bean straw		26	vetch-hay		23	bean straw
4	1		wheat straw	1		sainfoin	1		wheat straw
5	1	6	oat straw		21	hay	1	6	oat straw
6	1	6	artichoke stalk	1	19	red clover	1	6	artichoke stalk
7	1	8	turkey wheat	1	12	lucern	1	8	turkey-wheat str'w
8	1	8	buckwheat straw	1	16	hay	1	8	buckwheat straw
9	1	6	oat straw		7	horse-beans	1	6	oat straw
10		19	red clover		19	red clover		19	red clover
11		18	sainfoin		18	sainfoin		18	sainfoin
12	1	6	millet straw	1	6	millet straw	1	6	millet straw
13		30	lentil straw		21	hay		30	lentil straw
14		30	pea straw		21	hay		30	pea straw
15		30	barley straw	1		artichoke stalk		30	barley straw
16	1	10	horse-bean straw	1	10	horse-bean straw	1	10	horse-bean straw
17	1	1	rye straw	1	11	oat straw	1	1	rye straw
18	1	3	wheat straw	1	9	oat straw	1	3	wheat straw
19	1	6	rye straw	1		turkey-wheat	1	3	wheat straw
20	1	6	oat straw	1		turkey-wheat	1	6	oat straw
21	1	3	wheat straw		22	artichoke stalk	1	6	oat straw
22		30	lentil straw	1	30	vetch straw		30	lentil straw
23	1	6	oat straw	1	6	wheat straw	1	6	oat straw

The same writer gives the following as the proper winter feed of a ewe, the month preceding lambing :

TABLE 16.

1st day..	In the morning,	¾ lb.	of good oat straw.
	.. noon	½ ..	of good hay of clover.
	.. evening..	¾ ..	of good barley straw.
2d day ..	.. morning .	¾ ..	of millet straw.
	.. noon	2 ..	of potatoes with 4 oz. of chopped straw, and 4 oz. of oats.
	.. evening..	¾ ..	of barley straw.
3d day ..	.. morning .	¾ ..	of hay.
	.. noon	¾ ..	of hay,
	.. evening..	1 ..	of wheat, oat, barley or buckwheat straw.
4th day..	.. morning .	¾ ..	of summer straw.
	.. noon	½ ..	of chopped straw, with 3 oz. oats and 3 oz. bran, moistened with water.
	.. evening..	¾ ..	of winter straw.
5th day..	.. morning .	¾ ..	of hay.
	.. noon	2 ..	of potatoes with ½ lb. of chopped straw.
	.. evening..	¾ ..	of winter straw.
6th day..	.. morning .	¾ ..	of hay.
	.. noon	as in 4th day,	
	.. evening..	1 lb.	of straw.

All this would be infinitely "more nice than wise," in any part of the United States. Variations of dry fodder are well enough, but hundreds and thousands of Northern flocks receive nothing but ordinary hay, consisting mainly of Timothy, *(Phleum pratense,)* some Red and White Clover, *(Trifolium pratense et repens,)* and frequently a sprinkling of June or Spear grass, *(Poa pratensis,)* during the entire winter. Others receive an occasional fodder of corn-stalks and straw—and some farmers give a daily feed of grain through the winter. Where hay is the principal feed, it may be well, where it is convenient, to give corn-stalks (or "blades") every fifth or sixth feed, or even once a day. Or the daily feed, *not of hay*, might alternate between blades, pea-straw, straw of the cereal grains, &c. Should any other fodder besides hay be the principal one, as, for example, corn-blades or pea-haulm, each of the *other* fodders might be alternated in the same way. It is mainly, in my judgment, a question of convenience with the flock-master, provided a *proper supply of palatable nutriment within a proper compass*, is given. Hay, clover, properly cured pea-haulm, and corn-blades are palatable to the sheep, and each contain the necessary supply of nutriment in the quantity which the sheep can readily take into its stomach. Consequently, from either of these, the sheep can derive its entire subsistence. The same remarks *may*, possibly, apply to greenish cut oat and barley straw; but it would not, I apprehend, be economical or altogether safe to *confine* any kind of sheep to the *straw* of the cereal grains unless some of those little hardy varieties of sheep which would be of no value in this country. Experiment will readily show the flock-master what kinds of food are palatable and agree with the health of his flock. The following exceedingly valuable Table, prepared by Boussingault, will give the value of various kinds of feed in comparison with ordinary natural meadow hay, as ascertained by himself, Von Thaër, Block, and other distinguished Agricultural Chemists. The results are obtained by chemical analysis, and by actual experiments in feeding. The amount of nitrogen in 100 parts is made the chemical test of value, as it shows the quantity of fibrin, albumen, and casein, (by multiplying by 6.3.) The experimental result is obtained by weighing the animal and the feed, and giving him enough of each to maintain him in good condition.

TABLE 17.

FODDERS.

TABLE OF THE NUTRITIVE EQUIVALENTS OF DIFFERENT KINDS OF FODDERS.

Kinds of Food.	Standard water per cent.	Nitrogen per cent.	Nitrogen per cent. in the article not dried.	Theory.	Block.	Petri.	Meyer.	Thaër.	Pabst.	Remarks.
Ordinary natural meadow hay	11.0	1.34	1.15	100	100	100	100	100	100	
Do. of fine quality	14.0	1.50	1.30	98						
Do. select	18.8	2.40	2.00	58						
Do. freed from woody stems	14.0	2.44	2.10	55						
Lucern hay	16.6	1.66	1.38	83		90		90	100	90, 90 Dombasle,
Red clover hay, 2d year's growth.	10.1	1.70	1.54	75	100	90		90	100	[Crud.
Red clover cut in flower, green, do.	76.0		0.64	311	430			450	425	
New wheat straw, crop 1841	26.0	0.36	0.27	426	200	360	150	450	300	500 Rieder.
Old wheat straw	8.5	0.53	0.49	235						
Do. do. lower parts of the stalk	5.3	0.43	0.41	280						
Do. do. upper part of do. and ear	9.4	1.42	1.33	86						
New rye-straw	18.7	0.30	0.24	479	200	500	150	666		
Old do.	12.6	0.50	0.42	550						
Oat-straw	21.0	0.36	0.30	383	200	200	150	190	200	400 Schwertz.
Barley do.	11.0	0.30	0.25	460	193	180	150	150	200	400 do.
Pea do.	8.5	1.95	1.79	64	165	200	150	130	150	90 Pohl.
Millet do.	19.0	0.96	0.78	147		250				
Buckwheat do.	11.6	0.54	0.48	240		200				
Lentil do.	9.2	1.18	1.01	114	160	200		130	150	
Vetches cut in flower and dried into hay	11.0	1.16	1.14	101		125			100	
Potato tops	76.0	2.30	0 55	209		300				
Field-beet leaves	88.9	4.50	0.50	230	600				600	
Carrot do.	70.9	2.94	0.85	135						
Jerusalem artichoke stems	86.4	2.70	0.37	311					325	
Lime-trees, young shoots	55.0	3.25	1.45	79	73					
Canada Poplar do.	62.5	2.29	0.86	134	67					
Oak do.	57.4	2.16	0.92	125	83					
Acacia do. (autumn)	53.6	1.56	0.72	169						
Drum cabbage	92.3	3.70	0.28	411	556	500	250	429	600	
Swedish turnip	91.0	1.83	0.17	676		300		300	250	
Turnip	92.5	1.70	0.13	885	533	600	290	526	450	
Field-beet (1838)	87.8	1.70	0.21	548	366	400	250	460	250	
Do. white Silesian	85.6	1.43	0.18	669	366					
Carrots	87.6	2.40	0.30	382	205	250	225	300	250	380 Boussingault.
Jerusalem artichokes (1839)	79.2	1.60	0.33	348						280 do.
Do. (1836)	75.5	2.20	0.42	274						
Potatoes (1838)	65.9	1.50	0.36	319	216	200	150	200	200	280 Boussingault.
Do. (1836)	79.4	1.80	0.37	311						
Do. after keeping in the pit	76.8	1.18	0.30	383	400					
Cider apple pulp dried in the air	6.4	0.63	0.59	195						
Beet-root from the sugar mill	70.0		0.38	303						
Vetches in seed	14.6	5.13	4.37	26	30	54		66	40	
Field-beans	7.9	5.50	5.11	23	30	54	50	73	40	
White peas (dry)	8.6	4.20	3.84	27	30	54	48	66	40	
White haricots	5.0	4.30	4.58	25		39				
Lentils	9.0	4.40	4.00	29						
New Indian Corn	18.0	2.00	1.64	70		52				59 Boussingault.
Buckwheat	12.5	2.40	2.10	55		64				
Barley (1836)	13.2	2.02	1.76	65	33	61	53	76	50	
Barley-meal	13.0	2.46	2.14	54						
Oats (1838)	20.8	2.20	1.74	68		71		86	60	
Do. (1836)	12.4	2.22	1.92	60						
Rye (1838)	11.5	2.27	2.00	58						
Wheat (1836, Alsace)	10.5	2.33	2.09	55	27	52	46	64	40	
Do. from highly manured soil	16.6	3.18	2.65	43						
Recent Bran	37.1	2.18	1.36	85	105 160					Some specimens are twice as rich.
Wheat husks or chaff	7.6	0.94	0.85	135						
Rice (Piedmont)	13.4	1.39	1.20	96						
Gold of Pleasure seed (Madia)	8.0	4.00	3.67	31						
Do. cake	11.2	5.70	5.06	23						
Linseed cake	13.4	6.00	5.20	22	42	180				
Colza do.	10.5	5.50	4.92	23						
Madia do.	6.5	5.93	5.51	21						
Hemp do.	5.0	4.78	4.21	27						
Poppy do.	6.8	5.70	5.36	21						
Nut do.	6.0	5.59	5.24	22						
Beech-mast do.	6.2	3.53	3.31	35						
Arachis (Pindars) do.	6.6	8.89	8.33	14						
Dry acorns			0.80	143						
Refuse of the wine-press, air-dried	48.2	3.31	1.71	68		62			75	

The great value of pea-haulm, as shown in the above Table, is worthy of the particular notice of the Southern flock-master. Also that of millet straw, another crop peculiarly congenial to the Southern States, provided it can be cured so that sheep will eat it. Corn-stalks are not, unfortunately, included in the Table. According to Petri, 100 *pounds* of corn "straw," (including *stalks* and *leaves*, I suppose,) contains but $\frac{2}{5}$ as much nutriment as the same weight of "aromatic meadow hay," and not so much by $\frac{1}{5}$ as an equal weight of oat or pea straw, which *he* makes *equivalent* to each other! My opinion is that this by no means indicates the comparative value of *well cured* corn-stalks. No analysis of them now occurs to me, in any authority which I have on hand. Mr. Ellsworth, of the Patent Office, stated in the Cultivator in 1842, that the *juice* of corn-*stalks*, on Beaumé's Saccharometer, is equal in saccharine matter with that of the cane in this country, five times greater than that of the Northern sugar-maple, *(Acer saccharinum,)* and three times that of beet! The daily experiments of our farmers demonstrate the absurdity of placing corn-stalks below the value of the cereal straws. Cured green and bright they are a highly valuable fodder, and are relished by all herbivorous animals. My friend, James M. Ellis, Esq. of Onondaga, N. Y., one of the best managing flock-masters of this State, has fed corn-stalks largely to his sheep for several years and with decided succes.

—

Effect of Food in the Production of Wool.—The fact has been before alluded to that well fed sheep produce more wool than poorly fed ones. The question now arises—if the effect on the condition (flesh) of the sheep is the same, will one kind of food produce more wool than another? No doctrine is more clearly recognized in Agricultural Chemistry, than that animal tissues derive their chemical components from the same components existing in their food.* The analyses of Liebig, Johnston, Scherer, Playfair, Boeckmann, Mulder, &c., show that the chemical composition of wool, hair, hoofs, nails, horns, feathers, lean meat, blood, cellular tissue, nerves, &c. are nearly identical. The organic part of wool, according to Johnston,† consists of carbon 50.65, hydrogen 7.03, nitrogen 17.71, oxygen and sulphur 24.61. The inorganic constituents are small. When burned, it leaves but 2·0 per cent of ash. The large quantity of nitrogen (17.71) contained in wool, shows that its production is increased by highly azotized food. This is fully verified by the experiments made on Saxon sheep, in Silesia, by Reaumur, whose Table I append. A striking correspondence will be found to exist between the amount of wool and the amount of nitrogen in the food.

TABLE 18.

Kinds of food.	Increase of weight in live animal.	Produced wool.		Produced tallow.		Nitrogen per cent. in food.
		lbs.	oz.	lbs.	oz.	
1000 pounds of raw potatoes, with salt	46½	6	8¾	12	5½	0.36
1000 " " " without salt	44	6	8	10	14½	0.36
1000 " raw mangel-wurzel	38	5	3½	6	5½	0.21
1000 " pease	134	14	11	41	6	3.83
1000 " wheat	155	13	13½	59	9	2.09
1000 " rye, with salt	90	13	14½	35	11½	2.00
1000 " rye, without salt	83	12	10½	33	8½	2.00
1000 " oats	146	9	12	40	8	1.70
1000 " barley	136	11	6½	60	1	1.90
1000 " buckwheat	120	10	4½	33	8	2.10
1000 " good hay	58	7	10½	12	14	1.15
1000 " hay, with straw, without other fodder	31	15	8	6	11	
1000 " whisky, still-grains or wash	35	6	1	4	0	

* For full information on this whole subject, see Liebig's Animal Chemistry, Part I and II.

† See Johnston's Agricultural Chemistry—Lecture XVIII. Analyses of the horny tissues, by Scherer, will be found in the Appendix to Liebig's Animal Chemistry.

The singular difference stated in the Table, between the amount of wool produced by "good hay," and "hay with straw without other fodder," I confess is scarcely credible to me. It may be a misprint in the Table from which I copy.

The peculiar value of pease not only in increasing the wool, where they rank *first*,* but in the average comparative increase which they produce in *all* the tissues, is again worthy of notice.

—

Effect of Food in producing Fat and Muscle.—The increase of fat and muscle, as. of wool, depends upon the nature of the food. It would be foreign from my purpose to enter into an elaborate theoretical examination of this subject. Liebig, in Parts I. and II. of his Animal Chemistry, has covered the whole ground, and to him I take the liberty to refer you. Mr. Spooner, writing for England, where the production of flesh and fat is the primary object of Sheep Husbandry, has given a synopsis of Liebig's positions, analyses, &c., in his chapter (XXI.) on Feeding and Fattening—and the substance of this is again repeated by Mr. Morrell in his chapters on the same subjects, in The American Shepherd. To either of the latter I would refer you for *sufficient* details for practical purposes, or for *full* information, to Liebig.

The Tables of Boussingault and Reaumur, already given, (Tables 17 and 18,) sufficiently indicate the value of the various grains, straw, roots, &c., in fattening.

It is not very common, in the North, for *wool-growers* to fatten their wethers, for market, by extra winter feeding. Some give them a little more generous keep the winter before they are to be turned off, and then sell them when they have attained their maximum fatness the succeeding fall. When winter fattening is attempted, sheep require warm, dry shelters, and should receive, in addition to all the hay they will eat, meal twice a day in troughs—or meal once and chopped roots once. The equivalent of from half a pint to a pint of (yellow) corn meal per head per diem is about as much as ordinary flocks of Merino wethers will profitably consume, though in selected flocks consisting of large animals, this amount is frequently exceeded.

—

Feeding Grain to Store-Sheep in Winter.—The expediency of feeding grain to store-sheep in winter depends much upon circumstances. If in a climate where they can obtain a proper supply of grass or other green esculents, it would, of course, be unnecessary. Neither is it a matter of *necessity* where the ground is frozen or covered with snow for weeks or months, provided the sheep be supplied plentifully with *good* dry fodder. Near markets where the coarse grains find a good and ready sale, it is not usual in the North, to feed grain. Remote from markets, it is generally fed by the holders of large flocks. Oats are commonly preferred, and they are fed at the rate of a gill a head per day. Some feed half the same amount of (yellow) corn. Fewer sheep—particularly lambs, yearlings, and crones—get thin and perish, where they receive a daily feed of grain; they consume less hay; and their fleeces *are increased in weight*. On the whole, therefore, it is considered good economy. Where no grain is fed, three daily feeds of hay are given. It is a common and very good practice to feed greenish cut oats *in the bundle*, at noon, and give but two feeds of hay—one at morning and one at night. A few feed greenish cut peas in the same way. In warm, thawing weather when sheep get

* With the exception of "hay and straw"—the given product of which, in wool, I have already stated must undoubtedly be misprinted.

to the ground, and refuse dry hay, a little grain assists materially in keeping up their strength and condition. This may furnish a useful hint for many parts of the South. When the feed is shortest in winter, in the South, there are many localities where sheep would get enough grass to take off their appetite for dry hay, but not *quite* enough to keep them in prime condition. A moderate daily feed of oats or pease placed in the depository racks, would keep them strong, in good plight for the lambing season, and increase their weight of wool.

Few Northern farmers feed Indian corn to store-sheep. It is considered "too hot and stimulating," and sheep are thought to be more liable to become "cloyed" on it than on oats, pease, &c. I never have fed it to sheep sufficiently to speak advisedly on this point. A neighboring flock-master whose admirable arrangements for keeping sheep are only equaled by his usual success, lost most of a large flock of lambs a few winters since. They received all they would eat of the best hay, and, as the owner *supposed*, a half gill of corn a head per day. They were in fine order in the beginning, and for some time into the winter. During a thaw, when they got a little off from their feed, and looked "hollow," the shepherd, without the knowledge of the owner, increased the feed of corn. This caused them to eat still less hay, and the shepherd not only continued but increased the allowance of the corn as their appetite for hay diminished. In a short time they ate scarcely any hay, and soon after began to eat their corn very irregularly. Their stomachs were now so completely deranged, that they would not eat *anything*, in quantities sufficient for their subsistence, and they perished rapidly and miserably. The same consequences might doubtless have ensued from feeding *other grains*, in the same improper manner. But I am inclined to think that the evil would have been less rapid and remediless with some other grains. I do *not* consider yellow corn a very safe feed, at least for lambs and yearlings. From the obviously different character of the larger Southern varieties, I presume they would be less, and very probably not at all, objectionable for sheep feed. Half a gill of yellow corn, or a gill of oats per head, is a sufficient daily allowance of grain. While there can be nothing more absurd than the German *starving* system to increase the fineness of the wool, excessive fatness is not to be aimed at, especially in breeding-ewes. Store sheep should be kept in good, fair, *plump* condition. Lambs and yearlings may be as fat as they will become on *proper feeding*.

It will not do to suffer sheep to get thin in the winter, with the idea that their condition can at any time be readily raised by better feed, as with the horse or ox. It is always difficult, and unless properly managed, expensive and hazardous, to attempt to raise the condition of a poor flock in the winter—especially if they have reached that point where they manifest *weakness*. If the feeding of a liberal allowance of grain be suddenly commenced, fatal diarrhea will frequently supervene. All extra feeding, therefore, must be begun very gradually, and it does not seem, in any case, to produce proportionable results.

I have seen it stated that sheep will eat cotton-seed and thrive on it. If this be true, this must, of course, be a far more remunerating application of that product, than as a mere *manure* to soils.

—

Feeding Roots, Browse, &c., in Winter.—Ruta-bagas, Irish potatoes, &c., make a good substitute for grain, as an extra feed for grown sheep. I prefer the ruta-baga to the potato in equivalents of nutriment. I do not consider either of them, or any other root, as good for lambs and yearlings as an equivalent in grain. Sheep may be *taught* to eat nearly all the cul-

tivated roots. This is done by withholding salt from them, and then feeding the chopped root a few times rubbed with just sufficient salt to induce them to eat the root to obtain it; but not enough to satisfy their appetite for salt before they have acquired a taste for the roots.

It is customary with some of our flock-masters to cut down from time to time, in the winter, and draw into the sheep-yards, young trees of the hemlock *(Abies canadensis)*. The foliage is greedily eaten by sheep, after being confined for some time to dry feed. I have known sheep, undoubtedly, I think, killed by overeating it. This browse is commonly used for some supposed medicinal virtues. It is pronounced "healthy for sheep." The popular supposition is that it is a tonic and stimulant. If this be true, which I will not pause to inquire, of what *good* use are tonics and stimulants to *healthy* animals? With sheep, as with horses, and even with men, *preventive* medicines are productive of injury in a thousand cases, where they are of benefit in one. There could be no objection, certainly, to sheep's eating the foliage of the hemlock, if it was constantly accessible to them. Their instincts, in that case, would teach them whether, and in what quantities, to devour it. But when entirely confined to dry feed for a protracted period, sheep will consume hurtful and even poisonous succulents—and of the most wholesome ones, hurtful *quantities*. As a mere *laxative*, an occasional feed of hemlock may be beneficial; but in this point of view, a day's run at grass in a thaw, or a feed of roots, would produce the same result. In a climate where grass is obtained most of the time, I should consider browse for medicinal purposes entirely unnecessary.

—

Winter Feed of Breeding-Ewes.—Until two or three weeks preceding lambing, it is only necessary that breeding-ewes, like other store-sheep, be kept in good plump ordinary condition. Nor are any separate arrangements necessary for them, after that period, in a climate where they obtain sufficient succulent food to provide for a proper secretion of milk. In backward seasons in the North, where the grass does not start prior to the lambing time, careful flock-masters feed their ewes chopped roots, or roots mixed with oat or pea meal. This is, in my judgment, excellent economy.*

—

Regularity in Feeding.—If there is one rule which may be considered more imperative than any other in Sheep Husbandry, it is that the utmost regularity be preserved in feeding. First, there should be regularity as to the *times* of feeding. However abundantly provided for, when a flock are foddered sometimes at one hour and sometimes at another—sometimes three times a day and sometimes twice—some days grain and some days none—*they cannot be made to thrive*. They will do far better on *inferior keep*, if fed with strict regularity. In a climate where they require hay three times a day, the best times for feeding are about sunrise in the morning, at noon, and an hour *before dark* at night. Unlike cattle and horses, sheep do not eat well *in the dark*, and therefore they should have time to consume their feed before night sets in. Noon is the common time for feeding grain or roots, and is the best time if but two fodderings of hay are given. If the sheep receive hay three times, it is not a matter of much consequence with which feeding the grain is given, only that the practice be uniform.

It is also highly essential that there be regularity preserved in the *amount* fed. The consumption of hay will, it is true, depend much upon the

* For the effect of the various esculents on the quantity and quality of the milk, see Liebig's Animal Chem.

weather. The keener the cold, the more sheep will eat. In the South much would also depend upon the amount of grass obtained. In many places a light daily foddering would suffice—in others, a light foddering placed in the depository racks once in two days would answer the purpose. In the steady cold weather of the North, the shepherd readily learns to determine about how much hay will be consumed before the next foddering time. And this is the amount which should, as near as may be, be *regularly* fed. In feeding grain or roots there is no difficulty in preserving *entire regularity*, and it is vastly more important than in feeding hay. Of the latter a sheep will not overeat and surfeit itself. Of the former it will. And if not fed grain to the point of surfeiting, but still over-plenteously, it will expect a like amount at the next feeding, and failing to receive it, will pine for it and manifest uneasiness. The effect of such irregularity on the stomach and system of *any* animal is bad—and the sheep suffers more from it than any other animal. I would much rather that my flock receive no grain at all, than that they receive it without regard to regularity in the amount. The shepherd should be required to *measure* out the grain to sheep in all instances—instead of *guessing* it out—and to measure it to each separate flock.

—

Salt.—Sheep undoubtedly require salt in winter. Some salt their hay when it is stored in the barn or stack. This is objectionable, as you thus constitute yourself the judge, or controller in a matter, where the appetite of the sheep is a much safer guide. It may be left accessible to them in the salt-box (fig. 28) as in summer, or it is an excellent plan to give them an occasional feed of brined hay or straw. This last is done in warm thawing weather, when their appetite is poor, and thus serves a double purpose. With a wisp of straw sprinkle a thin layer of straw with brine—then another layer of straw and another sprinkling, and so on. Let this lie until the next day, for the brine to be absorbed by the straw, and then feed it to all the grazing animals on the farm which need salting.

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Water.—Unless sheep have access to succulent food or clean snow, water is indispensable. *Constant* access to a brook or spring is best, but in default of this, they should be watered, at least *once a day*, in some other way.

THE BEST THINGS TO IMPORT ARE BIPEDS,

Or two-legged animals, for they not only *consume* largely of the products of the cotton-grower, the wool-grower, and the iron-master, (and always in proportion to their wages,) but by their labour, they produce and add largely to the elements of the best sort of commerce and free-trade—commerce and free-trade among ourselves. We therefore rejoice much more when we see accounts of the importation of *men and women*, than of cattle and sheep. There is no better sign of the prosperity of a country than when you see *men* flocking into it from all parts of the world; and if the labour of the country had been *steadily protected*, as it was some years since, we should by this time have imported annually, more by a million, than we now do. Talk of military glory!—the glory of success in the work of "blood and slaughter!" —there is no glory to be compared with that administration of the affairs of a country, which wins for it the regard and admiration of the world, and makes of it a great magnet, attracting the talents, the capital, and the labour of men of all nations. One year of such bloodless and beneficent glory is worth an eternity of fame, won by arms and by conquest.

Immigration, says a New York paper, for the last month has been quite large, yet we see that, as compared with the same seven months of last year, instead of going on rapidly augmenting, as it would do under a common-sense (not party) system, it had actually fallen off. The Journal of Commerce gives it as 34,810 souls. Of the whole number 16,169 were from Ireland, 8449 from Germany, 4788 from England, and 1386 from Scotland. The following table will show the immigration at New York for the years 1849 and 1850, up to the 1st of August:—

	Year 1848.	Year 1850.		Year 1848.	Year 1850.
January	3,258	13,154	May	37,406	42,846
February	8,819	3,206	June	28,985	11,763
March	9,630	5,569	July	31,634	34,810
April	19,934	14,627			
			Total	144,656	125,975
Immigration less this year					18,682

THE ART OF IMPROVING THE BREEDS OF DOMESTIC ANIMALS.

IN A LETTER ADDRESSED TO THE RIGHT HON. SIR JOSEPH BANKS, K. B. BY SIR JOHN SAUNDERS SEBRIGHT, BART., M. P. WITH NOTES BY THE EDITOR OF "THE PLOUGH, THE LOOM, AND THE ANVIL."

Introduction.—Although the following letter was published by us in 1824, in a volume of "Memoirs of the Pennsylvania Agricultural Society," and in the "American Farmer," upon reading it, a few weeks since, and reflecting how many young farmers have grown up to man's estate since then, we conceived the opinion that it would justify a republication, together with a few notes, which are appended.—*Ed. P. L. and A.*

Dear Sir—I have not the presumption to think that I can throw any light upon the art of improving the breeds of domestic animals, which is now so well understood in this country; but, in obedience to your commands, I print these observations, to which I am sensible you have attached more value than they deserve.

The attention which gentlemen of landed property have, of late years, paid to this subject, has been extremely beneficial to the country; not so much by the improvements which they themselves have made, as by the encouragement which the professional breeders have received from their patronage and support, without which they could not have carried the breeds of cattle and sheep to the perfection which many of them have now attained.*

They have, likewise, been the means of making the best breeds known in every part of the kingdom, and of transporting them to districts, where it is not probable they would have been introduced, but through their agency.

The Duke of Bedford, Mr. Coke, and some few others, have not only been the liberal patrons of the professional breeders, but have themselves made great improvements in the breeds, to which their attention has been directed.

The same success has not, in general, attended gentlemen in this pursuit: the best breeds, after having been obtained by them at great expense, too frequently degenerate, in their hands, from mismanagement. They conceive that, if they have procured good males and good females, they have done all that is necessary to establish and to continue a good breed; but this is by no means the case.

Were I to define what is called the art of breeding, I should say that it consisted in the selection of males and females, intended to breed together, in reference to each other's merits and defects.†

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* We know nothing, in this happy country, of these distinctions of "*gentlemen* of landed property," and "professional breeders;" our "professional sheep breeders" are all "republican gentlemen;" but they are not, we trust, above taking advice in the art of raising and breeding sheep, let it come from what quarter it may.

† To this definition we would add, "*with some particular object in view*," and in regard to the breeding of sheep, that object should be, for the most part, to produce the most valuable wool with the least trouble and expense. Meat is to be had from other animals, *but wool and woollen clothing* only from the sheep.

No other animal is reared with such distinction between its meat and its covering. How great the difference of value between the coarsest and the finest wool! and in as much as the same amount of capital in the cultivation of the mere animal, will produce a wool worth fifty cents a pound for the finest, instead of ten for the coarsest, where the circumstances of the country are favourable, as in ours, the government should give the most profitable direction to the use of the capital so employed, by enabling the farmers to avail themselves of the profits of rearing the finer wool. This it could do by a *steady, specific, and adequate encouragement to our woollen manufacturers.*

There are those, we well know, who will object to this, as a mischievous interference of authority with private enterprise. They don't mark the distinction between details and

It is not always by putting the best male to the best female, that the best produce will be obtained; for, should they both have a tendency to the same defect, although in ever so slight a degree, it will, in general, preponderate so much in the produce as to render it of little value.

A breed of animals may be said to be improved when any desired quality has been increased by art, beyond what that quality was in the same breed in a state of nature; the swiftness of the race-horse, the propensity to fatten in cattle, and the fine wool in sheep, are improvements which have been made in particular varieties of the species to which these animals belong. What has been produced by art must be continued by the same means, for the most improved breeds will soon return to a state of nature, or perhaps defects will arise, which did not exist when the breed was in its natural state, unless the greatest attention is paid to the selection of the individuals who are to breed together.

We must observe the smallest tendency to imperfection in our stock, the moment it appears, so as to be able to counteract it before it becomes a defect; as a rope-dancer, to preserve his equilibrium, must collect the balance before it has gone too far, and then not by such a motion as will incline it too much to the opposite side.

The breeder's success will depend entirely upon the degree in which he may happen to possess this particular talent.

Regard should not only be paid to the qualities apparent in animals, selected for breeding, but to those which have prevailed in the race from which they are descended, as they will always show themselves sooner or later in the progeny. It is for this reason that we should not breed from an animal, however excellent, unless we can ascertain it to be what is called *well bred;* that is, descended from a race of ancestors, who have, through several generations, possessed, in a high degree, the properties which it is our object to obtain.*

The offspring of some animals is very unlike themselves; it is, therefore, a good precaution to try the young males with a few females, the quality of whose produce has been already ascertained: by this means we shall know the sort of stock they get, and the description of females to which they are the best adapted.†

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general principles of legislation. We agree with Burke, that "it is one of the finest problems in legislation, what a state ought to take upon itself to direct by the public wisdom, and what it ought to leave with as little interference as possible, to individual discretion." Still the responsibility of the general development of the great resources and labour of a country, must be assumed, as long as governments exist, and men and men's institutions remain imperfect.—*Edit. P. L. and A.*

* This rule, which is so well understood, and generally so carefully acted upon, in regard to *turf horses*, is shamefully neglected in the care of sheep.

Could our flocks be protected from dogs, and steady encouragement given to the cultivation of the finest wool, men such as Col. Ware, Mr. Reybold, Col. Randall, Mr. Taintor and others, might be rewarded for breeding rams, expressly to be annually sold or let on particular days, as by Mr. Jonas Webb and others in England. Last month, Mr. Webb had his 29th Annual "*letting*" of Southdown rams, attended by a large body of leading agriculturists from every part of the kingdom, and two from America. Sixty rams were *let* before dinner, at an average of a little more than $110 each. In 1849, Lord Ducie *hired* the highest priced tup at $430, "which his lordship *retains* this year on the *same terms*." The highest priced tup let this year, was for $320, to Lord Berwick. "Mr. Stevens, from New York, hired one sheep at 35 guineas, and this gentleman, we understand, also purchased ewes of Mr. Webb, previous to the sale."

† This result is not likely to happen where the breeding is kept *within the species;* then "like begets like" *with great* uniformity and precision; provided the good points of the animal have been well established by careful breeding through successive generations. But there is always danger that the best animals, the recent produce of less perfect stock, may breed back and bring out again the qualities of their inferior ancestry. The English farmer, Ellman, who won enviable distinction, as well by his high and liberal character as a farmer, generally, as by his wonderful success *in the improvement of Southdown sheep,*

If a breed cannot be improved, or even continued in the degree of perfection at which it has already arrived, but by breeding from individuals so selected as to correct each other's defects, and by a judicious combination of their different properties (a position, I believe, that will not be denied), it follows that animals must degenerate, by being long bred from the same family, without the intermixture of any other blood, or from being what is technically called *bred in and in*.*

Mr. Bakewell, who certainly threw more light upon the art of breeding than any of his predecessors, was the first, I believe, who asserted that a cross was unnecessary, and that animals would not degenerate by being *bred in and in*, which was at that time the received opinion.

He said, you could but breed from the best. Of this there can be no doubt; but it is to be proved, how long the same family, *bred in and in*, will continue to be the best.

No one can deny the ability of Mr. Bakewell in the art of which he may fairly be said to have been the inventor. But the mystery with which he is well known to have carried on every part of his business, and the various means which he employed to mislead the public, induce me not to give that weight to his assertions which I should do to his real opinion, could it have been ascertained.†

Mr. Meynel's fox-hounds are likewise quoted as an instance of the success of this practice; but upon speaking to that gentleman upon the subject, I found that he did not attach the meaning that I do to the term *in and in*. He said that he frequently bred from the father and the daughter, and the

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went so far (perhaps a little too far) as to say, on the necessity of having sheep "well bred:" "Where attention has not been paid to this axiom, I have seen the offspring every way inferior to both sire and dam; and I would rather, therefore, breed from an indifferent ewe and ram, that I know to be well bred, than from a ewe and ram possessing a good external shape derived from an indifferent stock, where little or no attention had been paid to the breeding."

* These remarks on the danger of breeding "*in an in*," as it is called, *i. e.* breeding too long *from one family*, are well worthy of the attention of the American sheep breeder, and not of him only. In certain noble families in Spain, who have for several ages married only amongst each other, a remarkable decline had been noticed, and the reader may remember the satirical lines of Lord Byron, as to the English nobility—

> "They breed in-and-in, as might be known,
> Marrying their cousins, nay, their aunts and nieces,
> Which always spoils the breed, if it increases."

But the author of the Memoir of Mr. Ellman rather slyly remarks, "All considerations drawn from the human species ought to be thrown very much out of the question, for, without any reflections on the modesty of the ladies of Spain or Minorca, or of any other ladies, there is an *uncertainty in the data* upon which we must reason, that would, for accurate purposes, tend not a little to perplex our conclusions."

Mr. Ellman says, "There is one remark, however, I would offer to all breeders: be not too partial to your own sheep, as it has operated much in preventing many from making improvements in their flocks. I would also advise every breeder, when he purposes saving ram lambs, to select thirty or forty of his best ewes, at the time of putting the ram with them, and should he have a ram superior to his own, let these selected ewes be put to him, and afterward save the ram lambs from their produce."

In some early number, when we can find space, we will give the whole of his capital essay on the breeding, rearing, and general management of Southdown sheep.

† These "*mysteries*" and "*misleadings*" of the public are disgraceful anywhere, and would not be tolerated in the United States, by men of respectability and good sense. Nothing can be more derogatory to the character of a farmer—let the study and practice of the "tricks of trade" be reserved for gamblers and horse jockeys; but let no such pustule ever appear on the skin of a gentleman. The mystery, not to say deception with which the celebrated and otherwise praiseworthy Mr. Bakewell, conducted his operations, will ever remain a blot upon his escutcheon as a breeder. What American farmer of the right spirit, would have it written of him thus? "We have one [letter] now before us, from Lord Egremont, introducing to his (Mr. Ellman's) notice, Mr. Bakewell's own nephew, to whom Mr. Ellman's sheep and stock were shown without reserve, at a time when, on Mr. Ellman's visit into Leicestershire, Bakewell *hid his best rams* in out houses and corners, that no hint might be gathered from them, for the amelioration of the much envied Glynde flock."

mother and the son. This is not what I consider as breeding *in and in;* for the daughter is only half of the same blood as the father, and will probably partake, in a great degree, of the properties of the mother.

Mr. Meynel sometimes bred from brother and sister. This is certainly what may be called a *little close:* but should they both be very good, and, particularly, should the same defects not predominate in both, but the perfections of the one promise to correct in the produce the imperfections of the other, I do not think it objectionable. Much further than this, the system of breeding from the same family cannot, in my opinion, be pursued with safety.

Mr. Bakewell had certainly the merit of destroying the absurd prejudice which formerly prevailed against breeding from animals between whom there was any degree of relationship. Had this opinion been universally acted upon, no one could have been said to be possessed of a particular breed, good or bad; for the produce of one year would have been dissimilar to that of another, and we should have availed ourselves but little of an animal of superior merit, that we might have had the good fortune to possess.

The authorities of Mr. Bakewell, and of Mr. Meynel, being generally quoted, when this subject is discussed, I have stated why I reject that of the former altogether, and that the latter, in point of fact, never fairly tried the experiment.

I do not find that any of the many advocates for breeding *in and in*, with whom I have conversed, have tried it to any extent; they say, that it is to perfect animals only that the practice applies; but the existence of a perfect animal is an hypothesis I cannot admit.

I do not believe that there ever did exist an animal without some defect, in constitution, in form, or in some other essential quality; a tendency, at least, to the same imperfection generally prevails in different degrees in the same family. By breeding *in and in*, this defect, however small it may be at first, will increase in every succeeding generation; and will at last predominate to such a degree as to render the breed of little value. Indeed, I have no doubt but that by this practice being continued, animals would, in the course of time, degenerate to such a degree as to become incapable of breeding at all.

The effect of *breeding in and in* may be accelerated or retarded by selection, particularly in those animals who produce many young ones at a time. There may be families so nearly perfect as to go through several generations, without sustaining much injury from having been bred *in and in;* but a good judge would, upon examination, point out by what they must ultimately fail, as a mechanic would discover the weakest part of a machine, before it gave way.

Breeding *in and in* will, of course, have the same effect in strengthening the good, as the bad properties, and may be beneficial, if not carried too far, particularly in fixing any variety which may be thought valuable.

I have tried many experiments by breeding *in and in* upon dogs, fowls, and pigeons. The dogs became, from strong spaniels, weak and diminutive lap-dogs; the fowls became long in the legs, small in the body, and bad breeders.

There are a great many sorts of fancy pigeons; each variety has some particular property, which constitutes its supposed value, and which the amateurs increase as much as possible, both by breeding *in and in*, and by selection, until the particular property is made to predominate to such a degree, in some of the most refined sorts, that they cannot exist without the greatest care, and are incapable of rearing their young without the assistance of other pigeons kept for that purpose.

The Leicestershire breeders of sheep have inherited the principles, as well as the stock of their leader, Mr. Bakewell. He very properly considered a propensity to get fat as the first quality in an animal destined to be the food of man. His successors have carried this principle too far; their stock are become small in size, and tender, produce but little wool, and are bad breeders.

By selecting animals for one property only, the same effect will, in some degree, be produced, as by breeding *in and in:* we shall obtain animals with the desired property in great perfection, but so deficient in other respects as to be upon the whole an unprofitable stock.*

We should, therefore, endeavour to obtain all the properties that are essential to the animals we breed. The Leicestershire sheep prove that too much may be sacrificed, even to that most desirable quality in grazing stock —a disposition to get fat at an early age, and with a small quantity of food.

Many causes combine to prevent animals, in a state of nature, from degenerating; they are perpetually intermixing, and therefore do not feel the bad effects of breeding *in and in.* The perfections of some correct the imperfections of others, and they go on without any material alteration, except what arises from the effects of food and climate.†

The greatest number of females will, of course, fall to the share of the most vigorous males; and the strongest individuals of both sexes, by driving away the weakest, will enjoy the best food, and the most favourable situations, for themselves and for their offspring.

A severe winter, or a scarcity of food, by destroying the weak and the unhealthy, has all the good effects of the most skilful selection. In cold and barren countries no animals can live to the age of maturity but those who have strong constitutions. The weak and the unhealthy do not live to propagate their infirmities, as is too often the case with our domestic animals. To this I attribute the peculiar hardiness of the horses, cattle, and sheep bred in mountainous countries, more than to their having been inured to the severity of the climate; for our domestic animals do not become more hardy by being exposed, when young, to cold and hunger. Animals so treated will not, when arrived at the age of maturity, endure so much hardship as those who have been better kept in their infant state.

If one male and one female only, of a valuable breed, could be obtained, the offspring should be separated, and placed in situations as dissimilar as possible; for animals kept together are all subjected to the effects of the same climate, of the same food, and of the same mode of treatment, and consequently to the same diseases, particularly to such as are infectious, which must accelerate the bad effects of breeding *in and in.*

By establishing the breed in different places, and by selecting, with a view to obtain different properties in these several colonies, we may perhaps be enabled to continue the breed for some time without the intermixture of other blood.

If the original male and female were of different families, by breeding from the mother and the son, and again from the male produce and the mother, and from the father and the daughter in the same way, two families sufficiently distinct might be obtained; for the son is only half of the

* But having fixed upon one grand object of our breeding, we should not allow ourselves to be diverted by minute attractions, or fanciful hopes.

† In this and the succeeding sentences of this page, our author has strongly and justly pointed out the *disadvantages of domestication*, and the careful sheep breeder should endeavour, as much as possible, to diminish or counteract them. Copy nature—avoid breeding "in and in"—give your ewes to the strongest and most vigorous bucks; preserve your stock from the severities of the winter, particularly from *dampness and sudden* changes of temperature, &c.

father's blood, and the produce from the mother and the son will be six parts of the mother and two of the father.

Although I believe the occasional intermixture of different families to be necessary, I do not, by any means, approve of mixing two distinct breeds, with the view of uniting the valuable properties of both. This experiment has been frequently tried by others as well as by myself, but has, I believe, never succeeded.* The first cross frequently produces a tolerable animal, but it is a breed that cannot be continued.

If it were possible, by a cross between the new Leicestershire and Merino breeds of sheep, to produce an animal uniting the excellencies of both, that is, the carcass of the one with the fleece of the other, even such an animal so produced would be of little value to the breeder. A race of the same description could not be perpetuated; and no dependence could be placed upon the produce of such animals; they would be mongrels, some like the new Leicester, some like the Merino, and most of them with the faults of both.

Merino rams are frequently put to Southdown and Ryeland† ewes, not with a view of obtaining the good properties of both kinds, but from the difficulty of procuring Spanish ewes, and with the intention of obtaining the Merino blood in sufficient purity, for every practical purpose, by repeatedly crossing the female produce with Merino males.

I have no doubt but that better stock may be obtained, in a few years, in this manner, from a large flock of well-chosen ewes, than by breeding, at first, from a small number of the pure Merino blood (and many of them cannot be obtained); for the great advantage to be derived from the means of selection afforded by a more numerous flock, will more than compensate for the little stain of impure blood, which would be insensible in a flock, crossed in this manner, for four or five generations.‡

The introduction of Merino sheep to this country opens a fine field for improvement. It has been ascertained that neither the sheep nor the wool sustains any injury from the change of climate or pasture; and the absurd prejudice that Merino wool could be grown only in Spain is fortunately eradicated.§

In comparing the Merino sheep with the Southdowns, which are allowed to be the best of our short-woolled breeds, the former have very much the advantage, both as to quantity and quality of wool; but I believe the latter would produce by far the greatest quantity of meat, from a given quantity of food, which is the criterion by which we determine the relative value of all animals as grazier's stock.

Taking the gross produce, both of wool and of carcass, at the present prices, the Merino breed may, perhaps, be the most profitable; but should it be generally introduced, fine wool would become cheaper, and mutton dearer. It is therefore not easy to form a conclusive opinion upon this subject.

Great improvements may undoubtedly be made in the Merino breed as to

* This most important rule, here dimly shadowed, is strongly and scientifically supported by Mr. Peter A. Browne, in the ninth chapter of his work upon pile, which we have read with pleasure, and hope soon to see published.

† Hereford Ryelands have no horns, white face and legs, and short fine wool.

‡ See Mr. Browne's criticisms upon this paragraph, in the work last referred to.

§ We cannot indorse this assertion, for Mr. Youatt measured the diameter of the wool of an English Merino, viz., Lord Weston's picklock, and found only 750 of an inch, whereas, the same animal, when taken to Saxony or the United States, produces a wool of 1875 and 2186 of an inch. After such stubborn facts have been made known, it is in vain to contend that, "neither the sheep nor the wool sustains any injury from removal to England." (See P. A. Browne's scale of diameter of wools, in The Plough, the Loom, and the Anvil, Vol. II., pp. 573–4.)

their disposition to get fat.* Their advocates say with truth, that the Southdown sheep were but a few years ago as imperfect in shape as the Merino now are; but they should recollect that a disposition to fatten at an early age was always the characteristic of the Southdown breed, even in its most unimproved state, and that it was from its possessing this very essential quality that so much attention has been paid to it.

It is well known that a particular formation generally indicates a disposition to get fat, in all sorts of animals; but this rule is not universal, for we sometimes see animals of the most approved forms, who are *slow feeders*, and whose flesh is of a bad quality, which the graziers easily ascertain by the *touch*. The disposition to get fat is more generally found in some breeds than in others. The Scotch Highland cattle are remarkable for being almost all *quick feeders*, although many of them are defective in shape. The Welsh cattle have but little disposition to get fat; not from being particularly ill-shaped, but because they are almost invariably what the graziers call *bad handlers*.

We must not therefore suppose that the bad shape of the Merino sheep is the sole cause of its being so ill calculated for the purpose of the grazier.

An observation which Dr. Genner made to me about ten years ago (the truth of which has since been confirmed by my own experience—that no animal whose chest was narrow could easily be made fat), applies particularly to the Merino sheep, who are in general contracted in that part, and is well worth the attention of those who wish to improve this breed.

Perhaps the great secretion of yolk, so essential to the production of fine wool, and which is excessive in the Merino sheep, may be incompatible with the fattening quality.†

I have always found the fineness of the fleece in exact proportion to the quantity of yolk it contained. Those who are unaccustomed to examine wool may consider this as a certain criterion of its quality; for, although the hair of some dry fleeces may be fine, it will always want the elasticity which is so much valued by the manufacturer.‡

It is to be regretted that so little attention has been paid to the improvement of British wool, and particularly to that of the short-woolled breeds.§ A fine fleece is not only more profitable to the owner, but from the closeness of its texture, and the quantity of yolk it always contains, is a much better protection to the sheep in bad weather than the open and hairy covering which too generally disgraces our flocks.

This extraordinary negligence in the sheep-breeders may, in some degree, be accounted for by the manner in which the wool-trade is carried on. The *growers* are seldom well acquainted with the value of this article, or indeed with its quality, and the *buyers* find their account in fixing a general price every year, for the wool of each breed, without making any distinction between the very different quality of the pile of different flocks.‖

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* Every "*improvement*" of this kind is an injury to the wool.

† This is an important suggestion, and should never be neglected by the American sheep breeder; for a *full chest* is not only the mark of a good sheep for slaughter, but also is one criterion of a *good breeder*.

‡ A free secretion of yolk is another characteristic of a good sheep, *as respects the fleece*, and we cannot too earnestly recommend attention to the subject.

§ It seems from this admission that the neglect of *British fine wool* was apparent as early as 1809, when this letter was written; and it has increased since that time, according to the account of the best observers. The sheep breeders of the United States should take warning and allow no neglect on their part, seeing that we are destined to supply not only ourselves, but England, with *fine* wools.

‖ The American sheep grower should endeavour to make himself a judge of the quality of the wool, so that he may not be liable to the imposition of any buyer or consumer. To enable him to do this is one of the objects of the work of Mr. P. A. Browne on hair and wool, to which every sheep breeder in the United States should subscribe.

It is likewise the custom, in many parts of England, for the growers to deliver their wool to the buyers, upon their engaging to give them the highest price of the year. Such bargains (and they are very general) are of course strong inducements to the purchaser not to give the full value for any wool that may be offered to them of a superior quality.

The fineness of the fleece, like every other property in animals of all kinds, may be improved by selection in breeding. The opinion that good wool could only be produced in particular districts is a prejudice which fortunately no longer exists.

Climate, food, and soil have certainly some effect upon the quality of wool, but not so much as is generally supposed. The fleece is affected by the degree of nourishment which the animal receives, not by the quality of the pasture on which it is fed. If sheep are highly kept, their wool will become less fine, but in other respects its quality will not be deteriorated. The wool of a starved sheep may be apparently fine, but it will be brittle, and of little value to the manufacturer.

A regular supply of food to the sheep is essential to the growth of good wool; for that part of the hair which grows when the animal is in a high state of flesh will be thick, and that which is grown when it is reduced by hunger will be weak and thin; and consequently the thickness of hair will always be irregular, if the animal passes from one extreme to the other.

The alteration which may be made in any breed of animals by selection can hardly be conceived by those who have not paid some attention to this subject; they attribute every improvement to a cross, when it is merely the effect of judicious selection.

I have often been told that, from the beautiful shape of Mr. Ellman's Southdown sheep, they must have been crossed with the New Leicester; and that from the fineness of their wool, they must have been crossed with the Merino breed; but I do not conceive that even the skill of this very distinguished breeder could have retained the good shape of the former, without any appearance of the coarseness of its wool or the fine fleece of the latter, without the deformity of its carcass, had he crossed his flock with either of these breeds.

It may as well be contended that the white pheasant, which is now become very common, was produced from a cross with a Dorking fowl, whereas, it was one of those accidental varieties which sometimes occur, and which has been perpetuated by selection. The same may be said of the endless variety in the colour, shape, and size of rabbits, ducks, and pigeons, in a domesticated state; a variety produced by the art of man, and which did not exist in these creatures in their natural state.

A greater proof, I conceive, of what may be effected by selection and perseverance, cannot be adduced.

There is, perhaps, no means by which the breeds of animals can be so rapidly and so effectually improved as by its being the particular business of some breeders to provide male animals for the purpose of letting for hire.* Our horses could never have arrived at the degree of perfection which they have now attained, but from the facility which has been afforded to every one, by the public stallions, of breeding from the best horses of every description, at a moderate expense.

The breeds of sheep to which this practice has been applied have attained great perfection, while those which have never been attended to by persons in this particular business, show no signs of improvement.

* We think that there is great good sense in these remarks, and we hope, ere long, to hear of their being put in practice in this country.

No trouble or expense will be spared by those who expect to derive profit, not from the quantity, but from the quality of the animals which they breed. The competition, which must always exist between breeders of this description, will be a never-failing stimulus to exertion.

The common farmer, who seldom sees any stock but his own and that of his neighbours, generally concludes, that his own have arrived at the summit of perfection. But the breeder who lets for hire[d] must frequently submit his male animals to the inspection of the public, and to the criticism of his rivals, who will certainly not encourage any prejudices he may entertain of their superiority.

In this trade, as in every other, there ought to be a regular gradation; those, for example, who hire a male for eighty guineas, will be amply repaid by letting seven or eight for twenty guineas each, as will those who hire for twenty guineas, by letting several for five or six.

Thus each, besides the improvement of his stock, will receive a fair remuneration, and every breeder have the means of selecting the male he thinks best calculated for the females he may happen to possess.

The same effect will not be produced by the sale of male animals; for we are induced to keep a male we have purchased at a high price, although we may not be entirely satisfied with his produce; but by hiring, we endeavour to select a male every year, with the properties in which our females are deficient, and whom we think calculated to correct the faults which arise from time to time in our stock.

These observations are the result of many years experience, in breeding animals of various descriptions. But the life of man is not long enough to form very decisive conclusions upon a subject which is so little understood, and which is darkened by innumerable prejudices. Many experiments must be tried, to establish a single fact; for nature is sometimes so capricious in her productions, that the most accurate observer will be frequently deceived, if he draws any inference from a single experiment.

I have freely stated my opinions, without considering them as conclusive, and shall be much gratified if they induce others to direct their attention to a subject which appears to me of great importance to the agricultural interests of this country.

I have the honour to be, dear sir, with great regard,
Your obedient humble servant,
J. S. SEBRIGHT.

Beechwood, *Aug.* 1, 1809.

Feat under Arms.—On Friday a match was undertaken by a young officer of the Guards, to walk, accoutred in every respect as a private soldier in heavy marching order, from London to Windsor barracks, in seven hours; five to one was subsequently betted against his doing it in six hours, the distance being 21½ miles; the weight about 60 pounds, with grenadier cap, knapsack, havresack, musket, &c.; and the difficulty of walking under such equipments, without previous training, was great. The feat was accomplished in five hours and a half, to the surprise of the natives and soldiery. Crowds were collected at the entrance of Windsor—the cheering was immense. The start from Hyde Park corner was at 8 A. M. The first 10 miles were walked in two hours 9 minutes, and the remaining 11 miles in about two hours and a half; the time of halting was 40 minutes. The rate of walking, therefore, with such equipments, without previous training, being about four miles an hour for 21 miles.—*Evening Paper.*

STEAM APPLIED TO AGRICULTURE.

Attention, Makers of Agricultural Implements.

In a late English agricultural gazette, a writer remarks: "A time is fast approaching when the plough must give way to a better and more effectual instrument; if not the spade, it must be nearly assimilating in its effects." The spade has been proved so superior to the plough, that many of our farmers begin to think of returning to that primitive method. This will never do; onward is the watchword. Why should we not have *a spade-steam engine?* My idea of such a machine is, that it should be a revolving box containing teeth; on the outside of the box, on one side, three rows of spades, opposite the same number of forks, six in each row; thus the machine would contain eighteen spades and as many forks. The spades to raise the sods and conduct them into the box; as the box revolves, the spades would rise and the forks descend and loosen the subsoil; as the forks left the subsoil, the earth to fall from the box and spread again on the land thoroughly pulverized by its revolutions in a well-toothed box. The engine to be worked by steam power, and moved by a couple of horses. Machinery for agriculture is far in the wake of every other thing in England. There are many works on the steam-engine in regard to its application to mines, mills, steam navigation, and railways, but no aid for the farmer."

In his beautiful "Inquiry into the History of Agriculture," Mr. Hoskyns takes this distinction between spading and ploughing:—

The plough, and all the instruments that follow it, are only the "animal-power" substituted for that more perfect process accomplished in brief by the spade, when worked by the foot, held by the hand, and directed by the skill and *purpose* of manual labour. This is what mechanical power must imitate; not the sluggish cleaving of the ploughshare, which only splits up an unbroken seam of surface, making a *fulcrum* of that which lies below, and thus pressing and polishing the subsoil year after year into barren and impermeable induration, which the roots of no annual can penetrate. This is but the first of a whole series of imperfect processes, not one of which it is even desirable to imitate; not one of which is *necessary* where the spade can be used.

Why then should we wish that *ploughing* should ever be done by steam-power, stationary or locomotive? What we want is not ploughing, but *cultivation*—that process which the farmer by necessity performs in three, four, or five acts, not half so well as the gardener accomplishes it in one. As well might we expect to apply successfully the boiler and cylinder of a locomotive to the pole of a four-horse coach, or the shafts of a wagon, or the level handle of a common pump, or the distaff and spindle of a cottage spinning-wheel, as attempt to gear on the power of steam to the elaborate clumsiness of a plough. In every case where steam has superseded animal labour (as it is its mission to do), it has demanded to be harnessed to the work with a harness of *its own;* it has rejected old-fashioned tools and their appliances, and has seized at once the shortest means to its object. Instead of the leverage of the horse's leg, pulling at the axletree, it seizes at once upon *the wheel*, and drives it round; and instantly (by that law of occult affinities above alluded to) a demand is raised for *the most perfect surface* for the wheel-tire to run on; the iron rail is supplied, and Mr. M'Adam, though a very good dog in his day, is discarded. So, again, instead of working at the pump-handle, it seizes at once upon the sucker-rod and drives it up and down. Instead of wasting time and labour in the back-and-forward action of *the oar*, it drives along the vessel by the continuous stroke of the paddle-wheel, or, still more

simply, by the screw. But of all its triumphs, the greatest and the most astounding was when the puzzling problem of *the spinning-wheel* presented itself! Here was the foot, the thumb, and finger, the directing will, all at work at once, and all to be imitated and superseded; the very moisture of the skin requisite to the rolling and hardening of the twist as it was pressed between the fingers! What an operation to attempt by the dead rollers of machinery. Under the full glare of such a precedent, what upon the same earth, it may be surely asked, declares that the act of inverting and crushing a clod of soil should present an insurmountable or an unprofitable task to steam-driven machinery? I say "inverting and crushing," for in those two acts lies the problem of cultivation. In a dry climate it is simpler than under our moist atmosphere, for we are obliged to chop the soil instead of crushing it. If we analyze the act of cultivation, as performed by the spade, it is as follows: The blade is pressed to the requisite depth into the soil, the handle is then bent down, as a lever, to lift the slice, which is turned over, and dropped into the trench top downwards; the under surface, thus exposed, is then chopped and cut, in order to admit the atmosphere, which, in fact, is the real fertilizer after all, and to expose the soil to which as fully as possible is the whole object of cultivation. It is hardly necessary to point out how imperfectly this is done by the plough. Instead of inverting, it turns the soil only half or three-quarters over; it goes through it like a wedge, *squeezing* it from its bed, instead of raising and loosening it. It is true it breaks the soil if light, but it is the heavy soils that most need breaking; and, in proportion as the furrow-slice is broken, it often drops back, and the inversion is less complete. It leaves the surface weeds either actually peeping at the edge of the furrow-slice, or, if concealed, yet seldom sufficiently buried to be destroyed; but, what is worse, it does all its work at the expense of the subsoil, which, year after year, is worn, and sometimes polished to a case-hardened surface by the repeated pressure of the share, and the stamping of the iron-shod hoofs that drag it. What can offer a more forbidding and impenetrable barrier to the descending roots than such a pavement as this meeting the sponge-like fibres that are destined to find nourishment for the stem, and which begin to seek it at the greatest depths, just when the plant is in the latter stages of its growth, forming the grain in the ear? This evil the spade entirely avoids; it neither hardens nor loosens the subsoil; it leaves it precisely in its natural state, moderately stiff, a condition perhaps the safest for plants of the grain tribe, which require a firm footing to carry their long stem, though for the more succulent tribes of root-crops a subsoil broken to a greater depth is desirable.

The plough is certainly a better cultivator upon a light than upon a stiff soil. It is upon heavy and retentive clays that the superiority of the spade is pre-eminent. Here, therefore, is the great field for improvement; what we want upon the clays (which embrace so large a portion of Great Britain) is a mode of cultivation which may be accomplished without the treading of animals or any *traction* at all of the implements of tillage across the worked land. In pursuing, therefore, the subject of cultivation by steam, the idea of the plough is a misleader. What we want is not to plough the land, but to cultivate it; and if, as I have endeavoured to show, the plough and all its subsidiary implements are a mere substitute for the spade—and, on stiff soils in a moist climate, a very expensive, cumbrous, and imperfect one—the object of the inventive machinist will be better directed, as well as simplified, by discarding it altogether from his thoughts, and concentrating his attention on the action of the spade.

The gardener scarcely permits a dog to walk over a bed that has been newly worked; yet the farmer is obliged to let his whole team of horses, with all

his heavy implements, pass over his land many times after the cultivation is finished; and even after the sowing is done, the seed-harrows do but skim and film over the dismal work made in damp weather by the tread of the horses that draw them, and the previous implements. On heavy land, in a moist season, this is most pernicious; in fact, it limits the cultivation of such soils to seven months out of the twelve. Now all attempts at cultivation by steam seem to have failed chiefly for this reason, that the experimentalist has set out with the idea of an instrument that is to be drawn backwards and forwards across the field, like a plough, either by a locomotive or a stationary engine. No such necessity exists. The spade is not *drawn across* the field; it acts perpendicularly upon the spot it is applied to; separating, lifting, and inverting each spadeful in succession, neither damaging by any farther pressure the soil it has once moved, nor hardening the subsoil.

The Field Bean.—A correspondent of the Germantown Telegraph gives the following as the advantages resulting to the farmer from the culture of the field bean:—

I am sorry to see this article so little cultivated among our farmers, inasmuch as there are but few crops cultivated more lucrative, probably, than the field-bean. On light soils they always yield a remunerating crop, and succeed generally far better, under every modification of season, than most productions. But little manure is required, as too affluent a supply of humus is liable to induce a disproportionate or morbid development of *haulm*, which is by no means conducive to productiveness, as in all cases where the vines are excessive in their luxuriance, less weight of grain is invariably realized than where the stalks are not pampered to undue expansion. Plants which spring up fortuitously on compost heaps rarely mature their seeds, or, when they do, fail to realize the extravagant expectations their early precociousness would lead us to expect. I have found that by breaking up my sward lands, which had, by long cropping in grass, become too far impoverished to grant a reasonable remuneration in that crop, and planting the field bean, with gypsum and house ashes in the hill, and a broadcast application of the same, after hoeing, I secured a fine preparation of the soil for a crop of corn, and that this grain succeeds much better on lands so prepared, with one half the manure, than on sward lands freshly broken, or even on those cultivated with a manured crop of potatoes the previous year. It is now generally conceded that all leguminous plants abstract but little from the vitality of the soil, except during the brief period in which they are engaged in elaborating the essential principles of the seed. The large broad leaves of this species of vegetation are so constituted by nature as to derive the great portion of their nutriment from the atmosphere, and hence it is that the bean, when grown and pulled at the period of inflorescence, tends rather to ameliorate than impoverish the soil. Beans are one of the best crops a farmer can raise on many accounts, but the peculiar advantages attending their cultivation, farther than I have already stated them, need not be alluded to; they will naturally suggest themselves to every practical mind at all familiar with their specific habits and modes of growth.

Seedling Grape.—I exhibited, at a late meeting of the Horticultural Society, under the initials "J. B.," two bunches of a dark-coloured seedling grape, which is mentioned in the report of the meeting at p. 119. At p. 120 of the same number, you say "it is a very nice grape, unknown to us. What are its history, its name, and its merits?" The bunches exhibited were from a seedling vine, and were grown in a pine-stove, in which there are a good many stove plants. In flavour we regard it as intermediate between the Black Hamburgh and West's St. Peter's, but it becomes more sugary the longer the fruit remains ripe before being cut. The length of time the grapes will remain ripe on the vine without spoiling forms one of its most remarkable characteristics. Those ripened last midsummer were plump until about a month ago; and now that they are a little shrivelled, they are still in good condition for the table. We believe it to be a valuable addition to the varieties now in cultivation, and we intend to propagate it.

GUANO—LIME—THE CANADA "RECIPROCITY" BILL, &c.—REMARKS ON BY CHAUNCEY P. HOLCOMB, ESQ., IN THE "AMERICAN FARMER" OF SEPTEMBER—together with a few items and observations, by the Editor of the *P., the L., and the A.*, to show how very wise it is for the American farmer to depend on "*the great grain market of the world*," for selling his wheat, and "*the great workshop of the world*" for buying his cloth and his iron: and, moreover, how impertinent it is for agricultural societies and agricultural periodicals, whose professed object it is to guard the interest and to promote improvement in the practice of agriculture, to concern themselves with *the politics of the Plough*, instead of leaving it entirely to politicians, partisans, and demagogues!!

(*Extract from Mr. Holcomb's communication.*)

"THE price of Guano is so enormously high that some may prefer to wait for later arrivals. I state for the information of such, that, in my experience and application, after the ground is ploughed, and covering it with a cultivator, it is as good as ploughing it down. I applied ten tons of Peruvian, last season, to a poor field on a farm in Kent County; one half before ploughing, the other after, as above: we could discover no perceptible difference in the wheat, though carefully examining it. This we discovered: that, on a land or two where the teams had been driven off by the rain before the guano was ploughed down, the wheat was much less, apparently nearly a difference of one half, so that guano should be put at once below the surface, out of the way of the dew and rains, or a large portion of its valuable salts will escape and be lost.

"I remember the query was put last season to the editor of the '*American Farmer*,' as to whether lime applied to the ploughed surface after the guano had been turned under, would affect the guano; and the answer, as a matter of opinion, and for reasons assigned, was in the negative, that it would not. Such is my experience on the field above alluded to, where by a misunderstanding my manager covered some twenty acres of it with a dressing of pretty recently slaked lime; we thought it did good rather than injury, so that the result of this *involuntary* experiment showed that the editor was right, as he generally is. The guano in this case had been ploughed down two or three weeks before the application of the lime.

"My guano cost me last season $45.59 cash the long or *legal* ton. The product of the field of 70 acres was 1200 bushels, which I have just got to our Brandywine market, where it brought me $1.15 a bushel. This may pay this season; but, considering the contingencies that attend the wheat crop, anything like $15 a ton added to this, which the holders in Philadelphia, I understand, are now asking, will not pay, and as I do not choose to grow wheat for the 'benefit of commerce' merely, shall not purchase at any such price.

"I highly approve the views of your correspondent, Agricola; no doubt he is right. The Peruvian government should by our government be possessed of all information in reference *to the extent of our market* for the sale of guano. We want a little good, practical, *business-like* diplomacy on this subject, and I trust we shall have it, when the monopoly of one English house could probably be broken up, and American Farmers be furnished with this very valuable fertilizer at fair and *regular* prices, which would greatly advance our agriculture.

"I hope your subscribers generally have, or will, attend to the suggestion you very properly made in a late number of the *Farmer*, of getting up and signing remonstrances against the Canadian 'Reciprocity' Bill; we acted promptly and with great unanimity here in the premises. The success of this measure would be injurious—most injurious to us. In the opinion of many, it would at once reduce the price of our wheat twenty cents a bushel, and oats not less in proportion. They have, it is said, a very large surplus the present season, and are ready to take possession of our markets; if for the benefit of other interests we are to have our '*home market*,' for the creation and support of which we are heavily taxed, shared by the untaxed Canadians, we should not only each and all remonstrate, but address our friends in Congress on the subject. We must give some attention to these matters or suffer the consequences, and we shall deserve to suffer them.

'For duller should we be than the fat weed
That roots itself at ease on Lethe's wharf,'

if we allow our grain markets thus to be surrendered to the importunity of foreign interests and the gratification of commercial cupidity."

ITEM No. 1.

In May last, we called attention, at page 697, Vol. II., to the subject of the Canada *reciprocity* bill, as it is called, and then stated, "No exertion will be spared to secure the

passage of the bill through Congress, and, when passed, it will be found to constitute *a bounty on the land and labour of Canada*, to be paid, good easy souls, by the farmers and planters, and land owners, and labourers of the Union."

We are glad to learn now, for the first time, that prompt and unanimous action was held in Delaware on the subject.

But why not, we would respectfully inquire, act also, in regard to that policy that puts out the furnace fires, and closes the factories of Delaware, Pennsylvania, Maryland, New Jersey and Virginia, and drives men at work in them, who would be good customers to the farmers here on the sea-board, to become his rivals, even against their inclination, in the west? Why not?

Having closed our mills and furnaces and mines, in the confident and boasted expectation of being enabled to find in "*the great grain market of the world*," a substitute for the consumption of hundreds of thousands of prosperous spinners and weavers, coal miners and furnace men, it may be a matter of some interest to our agricultural readers generally, and especially to those who think that agriculturists and agricultural periodicals have no concern with the politics of the plough; it may, we say, be a matter of some interest to them, to know how far the expectations of those who look to "the great grain markets of the world," are likely to be realized. We therefore commend to their perusal the following paragraphs, begging them at the same time to recollect that it is asserted, on the highest authority, that Russia now raises almost *five hundred millions of bushels of wheat*, for which she needs a market, and for which she will find an outlet so soon as she shall have finished her roads.

"The Emperor of Russia has ordered the formation of five or six lines of road connecting the south of Russia with Odessa, in order that the immense quantity of corn produced in this fertile and almost virgin soil may be more readily transported for export. It is expected, says a Russian correspondent, 'that *in a few years the markets of Europe will be so overflooded with Russian corn that all competition will be impossible.*'"

Is it a premium for fifty bushels of wheat on a single acre, or for a fat sheep, that will enable the American farmer to compete with the world, in "the great grain market of the world," to which he was recommended to look for salvation by the late Governor Wright, of New York, in an agricultural address, extolled to the clouds, and circulated by tens of thousands, for the instruction and benefit of American farmers? Or do they need to be told, not so much *how to make*, as to have secured to them, *a market in which to sell?* We only ask for information.

Item No. 2.

Those who believe that farmers have no concern in the legislation which tends to prevent diversity of employment, and adequate reward to labour on the sea-board, may here further see HOW THE TARIFF OF '46 TENDS TO INCREASE THE PRODUCERS OF FOOD AND TO DIMINISH THE CONSUMERS OF FOOD.

By the following paragraph our farming readers will be enabled to see how far the present system tends towards raising the prices of agricultural products, by making a market in the land for the products of the land.

EMIGRATION TO MINNESOTA.—A gentleman, who has spent a few weeks in Bangor, remarks, that emigration from Maine to Minnesota is going on almost to an enfeebling and injurious depletion. Materials and facilities for extensive and profitable lumbering operations are abundant in the last named country, and the prospect is that *up west* will be supplied from *down east* with the right sort of population for a successful development of the rich resources of the new settlement.—*Northampton Gaz.*

Item No. 3.

Those who think it wise policy to separate producers from consumers, as widely as possible, and to depend on foreign markets, which are always small ones, in preference to the home market, will see in the following HOW THE FARMERS AND PLANTERS OF THE WORLD ARE MADE TO PAY FOR SEPARATING THE CONSUMER FROM THE PRODUCER.

The producer of wheat pays the cost of going to market, insurance included. If he makes a market at home, he pays no insurance.

The producer of cotton and tobacco pays the cost of going to market, insurance included. If he makes a market at home, he saves insurance.

How much is then saved by making a market in the land for the products of the land, may be seen by the following paragraph, which we take from one of the journals of the day.

"VARIATIONS OF THE COMPASS.—According to the Journal of Commerce, it has been ascertained from authentic records, that Great Britain loses by wrecks between five and six hundred ships every year, or about three vessels in every two days. A considerable

proportion of these disasters is supposed to result from errors of the compass, caused by the attractive power of the guns of vessels of war, the presence of tanks and funnels, or the iron used in the construction of a ship. This deviation of the compass is found, by observation, to differ greatly in different vessels, so that there is no remedy for ascertaining the true amount but by direct experiment on board each ship. The 'Compass Observatory' has in consequence been established in England, where every ship of the Royal Navy has its compass adjusted previous to setting sail on a long voyage. Up to this time, however, this practice has not been observed in the mercantile marine, notwithstanding the enormous loss of life and property." Thus we see that even the variations of the compass may be shown to have some connection with agricultural economy.

ITEM No. 4.

THE FREE TRADE MODE FOR MAKING A MARKET OF COTTON.—We offer to our southern readers the following, as a specimen of what is now going on throughout the Union. But a few days since, we saw a notice of the stoppage of six factories in Pittsburgh, by which *eleven hundred and twenty-seven* people were deprived of the power to earn wages with which to pay for cloth and iron and coal. We have now another further west, and more must follow. Some of our western and southern friends have been disposed to "lay the flattering unction to their souls," of believing that *they* could do without protection, whatever the north and east might do; but we think a little time will satisfy them that *it is in the south and west that protection is specially needed.*

MAYSVILLE COTTON MILL—TEMPORARY SUSPENSION.—The operations in this important establishment were stopped on Saturday last, owing to the high price of raw cotton and the failure of yarns to command corresponding rates. The company have a pretty heavy stock of yarns on hand, enough to supply the demand for the few months during which operations will be suspended. At the present rates of raw cotton and yarns, the mill could not, by running, clear expenses. The stoppage, even temporarily, will be sensibly felt in our little city, as about 100 operatives, whose aggregate wages amount to about $600 a week, will be thrown out of employ, many of whom, we regret to learn, are in such circumstances as to make the want of employment a serious privation.—*Maysville (Ky.) Herald.*

ITEM No. 5.

We work up less cotton now per head, than we did three years since, and yet each successive week produces notices like the following—the consequence of closing mills and furnaces and mines, and thus depriving operatives of all kinds of the power to purchase cloth.

NEW YORK, FRIDAY EVENING, September 6, 1850.

The inactivity in cotton goods, noticed during the past four weeks, still continues, without prospect for improvement till the cold weather shall warn dealers that the cheap avenues of transportation are likely to be closed.

ITEM No. 6.

EFFECTS OF "FREE TRADE" ON MORALS.—The separation of the consumer from the producer tends to render all trade gambling. The dealer in flour, or cotton, or tobacco risks his fortune on the rise or fall of the article in which he deals, while his neighbour does the same on the rise or fall of stocks in the distant market of Europe—and another neighbour selects dice or cards as the commodity in which to deal, and risks his means, large or small, on the turning up of a club or a spade, or of one side or another of a little piece of ivory. "Free trade," as it is called, builds up great cities, filled with gamblers in cotton, flour, stocks, cards, and dice, as may be seen by the following paragraph, to which we invite the attention of such of our readers as *believe* that the morals of a country are worthy of consideration, and *know* that FOR ALL THIS THE FARMER AND PLANTER PAY.

PROFITS OF GAMBLING.—The New York Tribune says that two thousand men have for years procured a subsistence while avoiding useful labour of any sort in that city, by following gambling, as a profession. It estimates the annual amount of money obtained by gambling in that city, at four millions of dollars. This would give an average of two thousand dollars annually to each gambler in that city, rather more profitable than hard work, but whether it is a correct estimate we do not know. Most of the known gamblers that we have seen about this city, are as poor in purse as they are in principle, whence we conclude that the lucky ones are very few. The opinion expressed by the Tribune of the trade is doubtless a correct one. It says: "Many a man becomes a

professional gambler without being thoroughly a scoundrel; but no one continues a gambler for years without becoming a double-dyed villain."

Item No. 7.

The Progress of Real Free Trade in South Carolina.—We take the following from the Charleston Mercury, a paper heretofore strongly opposed to protection, and cannot but rejoice in the opportunity thus afforded of exhibiting to our readers the rapid progress of the doctrine, that if the farmer and planter would grow rich they must make a market on the land for all the products of the land.

"Encourage your own Mechanics.—Do not send abroad for help if you have work to do, when it can be done in your own neighbourhood—perhaps at your next door. Encourage your own honest, industrious, faithful mechanics. They need all the work they can get. By such a course, you keep money at home, assist the worthy, and have just as good work performed. It is the only way to make a town prosperous—to support your schools and churches. Where there is a disposition to send a hundred miles for articles that, to say the least, could be manufactured as well at your own door, there will always be little or no business done in the place—the churches will be thinly attended, and all kinds of labour extremely dull. Wherever mechanics are the best employed, prosperity is seen—the social virtues predominate, travelling mountebanks and peddlers retire in disgust, and a kindly, brotherly feeling is experienced, which is the source of unspeakable happiness.

"Whatever you have to be done, look around and see if your neighbours cannot do it. If you have a house to build, or a shoe to tap, a harness to be made, or a pump to be bored, a pack of cards to be printed, or a well to be dug, just look among your neighbours, before you undertake to send abroad; and if you have none around you capable of the task, it will be time enough to look elsewhere. It is a wrong idea, to suppose nothing is serviceable that is made at home. We know of many instances where men have refused to purchase work made by their neighbours, and sent to a distant city for the articles they needed, and paid a third more for them, when, behold! they had been manufactured and sent away to sell, by the very neighbours of whom they refused to purchase.

"Let it be the motto of all—I will encourage my own neighbours. In turn you will be encouraged also. A mutual feeling of good will and kindness will spring up in your midst, and prosperity will be observable in every street and in every dwelling."

Having read the excellent advice contained in the above, we would now ask our readers to look to the following results of making a market at home for the products of the soil, and to reflect what would be the value of the land, if, instead of raising a hundred weight of cotton, or ten bushels of wheat to the acre, they could raise tons of onions, potatoes, carrots, turnips, beets and hay, together with the mill and the fuel necessary for the supply of the hundreds of thousands of prosperous smelters of iron ore, miners of coal, and spinners and weavers of cotton, that would even now be found in the planting States, had the planters followed the advice of Franklin, Jefferson, Madison, and Jackson, by adopting the measures necessary to bring the manufacturer to take his place by the side of the agriculturist. Let them compare the value of land that yields tons of onions with that which yields hundred weights of cotton, and see if they would not be enriched by the adoption of a system of thorough protection, such as should bring to their cotton fields the English consumers of these onions.

A Large Onion Grower.—Mr. Circuit, a farmer at Eastham, Essex, England, has at the present time upwards of 600 people—men, boys, and women—employed in pulling, carting, and peeling onions for pickling, and they will be thus engaged for two months. He pays £200 ($1000) weekly, and the cost of each acre of onions averages £100. This includes preparing the ground, seed, weeding, gathering, and peeling. Last year he sowed nearly a ton of onion seed. The onions are pulled by women by the rod, and skinned by the gallon.

Item No. 8.

Turning Consumers of Food into Producers of Food for the Benefit of the Farmers.—We pray our agricultural readers to determine for themselves the amount of benefit they are likely to derive from closing the furnaces of the Union. In and about one small town in Pennsylvania, we have seen that no less than one hundred and eighteen houses are now unoccupied, that, but recently, were occupied by prosperous consumers of food and producers of iron. The men and the families have disappeared. They have gone west, there to aid in swelling the amount of the surplus, for which we are said to need a market, and this they are now doing, at the moment when, in "the great

grain market of the world," the price of food is lower than it is in the cities of the Union. When will our farmers learn the great lesson, that the only way to obtain good prices for food is to increase the supply of coal, cloth, and iron, and other commodities to be exchanged for food?

More of the Blessings and Benefits of the "Better Tariff" of 1846.—The Deputy Marshal of Montour County, Pa., has taken the census of the borough of Danville, and it tells a sorry tale for the condition of things there. Instead of an increase in the population, there has been a *decrease!*—and all owing, we suppose, to "over production!" The *Democrat*, published at that place, says:—

"The decrease of the number of inhabitants from the amount estimated in the years '45 and '46, may be accounted for, in some measure, by the fact that, in taking the present census, it was discovered that there were sixty-four houses uninhabited within the borough limits, and fifty-four in the township of Mahoning, in the immediate neighbourhood of the borough," and adds, in reference to the matter, that "it furnishes a fearful commentary, among many others, of the depopulating and devastating effects of the British Tariff of 1846, which has driven one-half of our operatives, with their families, to seek homes and employment in other lands."

Item No. 9.

Value of Slave Labour in Factories.—We earnestly commend to the attention of our planting readers the facts contained in the following paragraphs, which we take from the *New Orleans Bulletin*. Let them look to the fact that *ten hands in a mill can convert into cloth all the cotton that one hundred can raise*, and then let them look to the chapter given in our May number, and entitled, "How protection affects the planter," and let them see that they now give five pounds of cotton for one pound converted into cloth; and then, having done this, let them determine for themselves if we are not right in saying that the *monopoly system* of England, known by the name of free trade, is the most ingenious invention for taxing the farmers and planters of the world, that was ever designed.

"This fact is one of high importance, as it will always afford a resource to the South for the employment of their slave-labour in times of agricultural depression, and will enable the cotton-growing States to treble or quadruple the value of their cotton crop, by turning it into yarn and cotton cloth. The importance of this can be estimated by the fact that ten hands in a cotton-mill can spin into yarn as much cotton as can be raised by one hundred hands in the field, and the labour of these ten, therefore, at once doubles the value of the cotton produced by the one hundred *field* hands; in other words, one hundred and ten hands, employed in *growing* and *spinning* cotton, will give an income equal to the labour of two hundred hands employed exclusively in *growing* it. Yet it is under such results—actual, practical results, and not theory, that the South has for so many years been opposed to the establishment of factories among them. Had the South started in the race of cotton and woollen factories at the same time with New England, how different would have been the present situation of the planting States, and how their wealth would be counted by *hundreds of millions* beyond what it now is. Thank Heaven, however, the eyes of the South are beginning to be opened on the subject, and in some of the Southern States are actually *wide open*, never again to be reclosed by the preachings of prejudice or the rantings of demagogueism.

"It is not among the least interesting facts in connection with the subject, that such an article as the following should be found in the editorial columns of the *Mercury*, and shows what a great 'change has come o'er the spirit of its dream,' in respect to factories at the South."

Item No. 10.

From the "Mark Lane Express," London.

Exports to the United States for the first six months of each of the following years:—

Cotton Manufactures from English Ports.

	Plain calicoes. Yards.	Printed calicoes. Yards.	Yarns. lbs.
1848,	9,950,156	19,220,121	30,581
1849,	7,518,155	24,724,232	52,647
1850,	11,640,007	27,931,744	59,246

SILKS, LINENS, AND WOOLLENS.

	Silk and mixed silk manufactures.	Linens exclusive of yarns.	Woollens and woollen mixed exclusive of yarns.
1848,	£93,277	£388,766	£728,141
1849,	89,612	396,216	838,658
1850,	151,822	484,364	1,254,119

Thus we see that we are now importing cotton goods at the rate of about 80 millions of yards a year, and silk, linens, and woollens, exclusive of yarns, at the rate of $16,000,000. Truly may the *Edinburgh Review* repeat—America is but a colony of Great Britain in a matured state! But what have agricultural societies or agricultural periodicals to do with these things? Is it not better to go in debt for these things to Mother Britain, whose starving population can work cheaper than it is pleasant for our people to do, than to manufacture them ourselves, securing to the American planter and farmer the custom of all who here would be employed in the manufacture of them? We only ask for information.

EFFECT OF BRINGING THE CONSUMER TO TAKE HIS PLACE BY THE SIDE OF THE PRODUCER.

THE MILK BUSINESS.—We learn from a farmer, residing within a few miles of this village, that over $4,000 worth of milk was sent to market the last year from the farm on which he lives. The income to the railroad, for the transportation of this milk, must have been about $1,000.—*Goshen (N. Y.) Democrat.*

EFFECT OF SEPARATING THE CONSUMER FROM THE PRODUCER.

ON THE LABOURER.—Of Ireland, the *London Times*, of August 16, remarks:—

"The social state exhibits the same shocking features. Evictions *en masse* are met by occasional assassination; and, while thousands perish of hunger and nakedness on one side, a few landlords and their agents bite the dust on the other."

A Dublin letter to the *Times*, dated August 13, says:—

"Thousands upon thousands of our population are looking across the wide waters of the Atlantic in expectation of the promised remittance to bear their charges to the land of hope. Every country post-office in Ireland is beset on market days with anxious inquiries for 'letters from America;' and it is really astonishing how many of those who go there are enabled to send to their friends the means of emigrating."

ON THE LANDOWNER WHOSE CUSTOMERS ARE THUS COMPELLED TO FLY THE LAND.—Up to the 31st of July, 1850, no less than 1,085 petitions have been presented, the gross amount of encumbrances on which is £12,400,368, and the annual rental is £655,470. The amount of land sold to the same date is £524,457, and since that about £124,017; whilst an enormous amount of property is advertised for sale for the months of October and November next.

SALE OF MR. SHEAFE'S SHORT-HORN CATTLE.—This great sale came off at the High Cliff Farm, Duchess county, New York, as advertised, on the 29th of August.

At twelve o'clock M., upwards of three hundred persons had assembled upon the ground, many of whom were opulent farmers of the neighbourhood, and gentlemen from distant parts of the country.

A bountiful collation was provided under a large awning, of which the company were invited to partake, as they came on to the ground. This finished, and fifteen minutes grace allowed, for laggers behind time, Mr. A. B. Allen—to whose care Mr. Sheafe had left the stock and farm—called the company to order at a quarter past one, P. M., and proceeded to address them, for about ten minutes, on the value of this highly-improved stock to the dairymen and graziers of the country, and also as an additional ornament to the grounds of country gentlemen.

A friend has supplied us with the particulars; but all we have room for is to state summarily that the number of animals sold was thirty-two, and the average price was within a fraction of $120.

Mr. Miller, the auctioneer, "acquitted himself excellently well, and won the good opinion of all parties concerned." We have no doubt the successful result is, in a high degree, attributable to the able management of Mr. Allen.

ON WOOL.—FROM W. F. VAN AMRINGE, ESQUIRE, TO P. A. BROWNE, ESQ., LL.D.

MONTGOMERY, ORANGE CO., N. Y., *Aug. 9th*, 1850.

MY DEAR SIR: On perusing my letter published in *The Plough, the Loom, and the Anvil*, for July last, I find a part of it requires explanation, and, in its application to agriculture, perhaps a little correction. In a matter of so much importance as the production of wool, every person who advances a doctrine under the hope of influencing the community should conscientiously believe the doctrine he enforces, and take all possible care that his views are clearly and fully expressed. The letter I had the pleasure of sending you, not being designed for publication, is not as guarded, in one particular, as I think the importance of the subject demands, and therefore needs explanation.

In respect to the value of your letter to Mr. Reed, detailing the degrees of fineness of the wools of different quarters of the globe—the comparison instituted between the wools of this and other countries—and the conclusions you have legitimately inferred from your microscopic investigations—it is scarcely possible to speak in too strong terms. I am a practical farmer, and have for many years looked with deep and confiding interest to agricultural chemistry, in the hope that my favourite occupation would repose on it, as have several of the arts—dyeing, bleaching, &c.; but, unfortunately, this science has not yet done anything to win the confidence of practical agriculturists, beyond confirming the practices of some of our best farmers, resulting from observation, sagacity, and experience. For example—housing stock in winter, protecting manure from exposure, &c., were practices among good and thrifty farmers before science informed them that animals were stoves, and food fuel; and that the stercoraceous heap contained soluble salts and ammonia, which would waste by exposure. In short, agricultural chemistry is only arraying itself preparatory to usefulness; but has not yet, so far as I know, been of much benefit to agriculture, beyond making the beneficial practices of good farmers more imposing by being communicated in scientific language, and confirmed by scientific investigations. It was in reference to this state of things that I made the broad assertion that your letter to Mr. Reed "is one of the most valuable agricultural papers I have ever seen," *when viewed as a pure contribution of science to agriculture.* To estimate the value of this contribution, it is necessary to have some idea of the value of sheep husbandry to the farmer, and to the nation; some idea of the labour, expense, art, and science, required of the breeder of animal properties and qualities; some idea of the peculiar influence of our political and social institutions to prevent the concentration of labour, capital, art, and science to any particular branch or interest of husbandry; and then we shall be enabled to see the advantage derived from climatic influence alone, as a partial or full substitute for all these difficult, or, in our peculiar circumstances, almost impossible attainments and requirements. Your investigations show that English and Merino sheep, imported from England, double the fineness of wool by domiciliation with us, when preserved in their purity by ordinary care and management; and that the Saxony sheep *do not degenerate.* These are facts which were unknown until your investigations, and, consequently, are contributions of science to agriculture. If an equally valuable contribution has been previously made, I am not aware of it. If one of a nature so practical, requiring so little care, management, or outlay of capital, and at the same time presenting such strong incentives to agricultural enterprise in a staple of vast national importance, had been before promulgated, I am surprised at the continued apathy of

practical farmers to the labours of scientific men. The most stolid are awakened by their interest, and will naturally look to the means of promoting it; and our farmers, instead of being stupid, as a body of men will compare favourably with any other class of men, and will eagerly adopt scientific recommendations, when the state of science is such as to deserve their confidence. It has been hitherto lightly esteemed by practical agriculturists, because it has been of very little practical value to them.

So, also, your remark, that, "if we are to become one of the greatest wool-growing countries in the world, we *must found a permanent race*, possessing the good qualities of both parents, and not a continuous production of hybrids," is of much value to the country. Its value consists in the fact that hybrids have a constant tendency to return to the type of one of the parents, or become extinct by the loss of procreative energy; therefore, to continue to possess the desirable properties obtained in the hybrid stock, requires constant vigilance, and much sagacity, to know when and how to resort to the original types for a dash of blood to restore, or keep in proper vigour, the procreative energy of the hybrid stock; qualifications so rare that we could not hope to find them possessed by one in a thousand of our farmers, and, if possessed, could not always be judiciously exercised, because of the variety of interests which demand care and attention. In Europe, the requisite vigilance and skill to preserve the procreative energy of stocks, without deterioration of desirable properties, are more easily obtained than in the United States, because the landed proprietors are few, very wealthy, and keep large flocks and herds; consequently, they require and can afford to procure competent shepherds and herdsmen to devote exclusive attention to their stocks, and supply any deficiency of skill in themselves. In our country, every farmer is proprietor of a comparatively small tract, is comfortable, but comparatively poor, leads his men in the performance of every active duty, and the flocks and herds are generally small, and receive only the divided attention of the farmer as an item of the interests of his farm. Therefore, although hybrids of a desired quality might be preserved by the wealth and consequent vigilance of the large proprietors of Europe, in our country they would be likely to degenerate, because the interest at stake is too small to afford or receive the requisite attention to continue them. Nor is it desirable that this state of things should be altered among us; for our republican institutions rest upon our numerous, comparatively small landed proprietors, or farmers; whereas the monarchies of Europe rest upon their large landed proprietors, or nobility, who, either in fact, or by necessary consequence, hold the mass of agriculturists (peasants and tenants) in bondage. Now as the skill required for the production of a valuable hybrid stock is among the highest attainments of human science and art; and the skill required for their preservation, when obtained, is scarcely less than for their production, it is easily seen why the lords in Europe may succeed, while the proprietors in America must fail. Hence the value of your remark that, "if we are to become one of the greatest wool-growing countries in the world, *we must found a permanent race*, possessing the good properties of both parents, and *not a continuous production of hybrids.*"

The value of this remark is much enhanced by the fact you exhibit, that English and Merino wools "increase in fineness in the United States without the aid of any crossing," in two instances in a twofold degree. Some of our spirited farmers should ascertain to what extent this principle, under ordinary care and management, will carry the improvement of sheep; because it may be discovered that the same species may produce "a permanent race," possessing all the desirable qualities of the best hybrids. Your figures, which show an improvement of European breeds of double their original fineness,

by these agencies alone, indicate the probability sufficiently to justify the hope of success in the experiment. A great benefit would certainly result from such a procedure, if it should fail to produce the highest grade of wool; because, by improving each species to its utmost capability, we should possess natural stocks in a condition for commencing the hybrids, nearly at the point of improvement to which the hybrid arrives after the most skilful management; and it appears to me highly probable that a stock in such high improvement, possessing the natural constitutional vigour, would carry the excellent properties of a hybrid stock as much beyond their present excellences as hybrids are now beyond the points of their parent stocks. Judging from your paper on human pile, it appears that hybrids sometimes produce hair or wool *of a character different from either parent, not intermediate between them.* Should this be true with sheep, and I see no reason against it, when a desirable grade of wool shall have been thus obtained, the skilful breeder, by closely watching the inclination of his flock to return to the type of either parent, or to impairment of procreative energy, may restore his desirable properties by a judicious dash of the original stock from the side opposite to that towards which his flock leans.

Climate and keep being the same, does it not generally follow that the higher grade of wool of hybrids bears a relation to the impairment of constitutional vigour by the condition of hybridity? In other words, will not a flock which is fast hastening to extinction by a defect of procreative energy, bear finer wool than the same flock when first produced as a cross? Would not the same degree of fineness be produced *by breeding in and in closely*, in the same species, to a given point? If both these things should be true, the latter would be the preferable mode, because it would require much less skill and management in the breeder. If either should be true, it might be made the foundation of skill to produce extremely fine wool at the expense of the weight of the carcass. I say weight of the carcass, because I think the delicacy of the flesh would compensate for the loss of weight in some measure. It has often appeared to me that this is the reason why the differences of carcass and wool prevail among our domestic sheep, and that these differences did not originally arise from crosses of different species by the production of hybrids.

In the preceding remarks, I have taken it for granted that there are distinct species of domestic sheep, a matter not yet settled by naturalists. I notice that you say you can prove it; but, as I have not yet seen a statement of the facts on which you rely, I can say nothing respecting them.

You will also notice that the law stated in my letter, viz. "that crosses of temperaments in the same species are beneficial to progeny, while crosses of even proximate species *are always prejudicial*," relates to the vigour and condition of the progeny, which the interest of man may require to be sacrificed by the production of a hybrid, more or less fertile in proportion to proximity of species. I quoted it to show that, if your investigations should lead to the production of a stock of the same species as valuable as hybrid stock, the gain in vigour and in constitution, as substitutes for skill and management, would be of little less value than your proof that our climate and soil are as favourable for sheep husbandry as the best climate and soil of Europe.

Very respectfully yours, truly,
W. F. VAN AMRINGE.

ON A VARIETY OF ITALIAN RYE-GRASS.

BY W. DICKINSON.

To Lord Portman.

My Lord: Your lordship's request that I should furnish the readers of the Royal Agricultural Society's Journal with all the information I possess as to the culture of Italian rye-grass is the only apology I shall offer for troubling them the second time on that subject.

In the first instance, I had to communicate a new method of cultivating a peculiar plant, the result of which was as startling as it was new, whereby nine or ten crops of excellent green food had been obtained between March and December; being cut in the former month and watered with liquid manure, consisting of one-third of pure horse urine and two-thirds of water, distributed from a London street water-cart passing once over the plant immediately after the grass was cut, one watering being sufficient for one crop. That report created considerable interest, and induced noblemen, gentlemen, farmers, and traders to test the system with the same object, the result of whose practice upon various soils, with different treatment, I now purpose to lay before the readers of the journal, feeling assured there is matter well worth the consideration of practical agriculturists. I think it important that all the information I have been able to collect, bad as well as good, should be set forth; if, therefore, my paper is somewhat tedious to read, it may be a palliation to know it was much more troublesome to collect.

The method I then recommended was to prepare the land by ploughing, cleaning, and reducing it to a fine surface in the month of August or September, to sow by a broadcast machine* two bushels of seed per acre (three, I think, is better, sown at twice by crossing the land with one bushel and a half each way), or four bushels per acre by the hand, to harrow lightly in, hand-weed the first growth, and, as soon as there was about eighteen inches of grass, to cut it for green food; watering the plant with the liquid day by day immediately after the grass was removed, and so continue to cut and water, cut and water, from March till November. The plant is a biennial; after two years, the land may be ploughed and re-sown if required: it will be seen in how few instances this plan has been adopted, and, when it has, in almost every case, in all kinds of soils, success has followed the operation.

I have applied to about ninety persons, to whom I supplied seed, for information, and have received forty-four answers, twelve of which give no information at all, and so must be omitted.

I shall now proceed to the details, classing the reports into soils and subsoils, showing the means used and the amount of produce obtained:—

1. *Sand upon Limestone.*—Shallow and hot; entirely failed.—Hon. P. J. Pierrepont.

2. Sown August; no manure, no urine; first crop 3 feet high in May; second, 2 feet 6 inches first week in August.—Rev. Thomas Cator.

3. *Light Dry Sand upon Red Sand.*—Sown September; no urine; produce, two crops, each 18 inches; as hay one ton and a half per acre.—His Grace the Duke of Bedford.

4. *Light Soil, Sandy Subsoil.*—Sown October; light dressing, stable dung ploughed in, and dressed after cutting with tank-water from the village; seven crops; fed twice; mown twice, with three feet 6 inches of grass to each crop; fed twice again, and had 16 inches of grass standing September 14; the crops weighed as green food 30 tons per acre.—J. Whitworth, Esq.

5. *Red Sandstone.*—Sown September and October; dressed with 13 cwt. of Ichaboe guano to the acre, and produced a net profit of 7*l.* 9*s.* 8*d.* [$37] per acre. This valuable paper is attached entire, and is highly recommended for perusal.—Capt. Buller.

* Who has seen that machine in this country! If no one, why is it not imported, or a model or drawing of one by agricultural institutions and societies? what are they doing?

6. *Sand, Subsoil Stonebrash, 12 inches of Sand upon Stonebrash.*—Sown September; dressed with farm-yard liquid; two crops; one cut green, and one for seed; as hay, 25 cwt. to the acre.—R. S. Holford, Esq.

7. *Sandy Loam upon Sandstone Brash.*—Sown October; dressed with rotten dung before sowing in the spring with 2 cwt. of guano to the acre, and with tank-liquid after first crop; two crops; one 18 inches, one 14 inches high.—C. Walker.

8. *Sand upon Gravel.*—Sown September; 3 feet sand upon gravel; dressed with rotten dung; two crops; May. 2 feet of grass; July, 1 foot and thin.—Thomas Turner, Esq., President, Veterinary College.

9. *Sandy Loam, Open Subsoil.*—Sown February; dressed with urine before sowing, and 1½ cwt. of guano to second crop; three crops, 18 inches each, 20th May, 10th July, 10th September.—Thomas Bulmer, Fochabers, Gordon Castle, Scotland.

10. *Light Soil, Gravelly Subsoil.*—Sown November; dressed with farm-yard dung in October; no urine; three crops; 3 feet of grass to each.—C. Porcher, Esq.

11. *Loam upon Gravel.*—Not drained, no manure, no urine, except upon small quantity, and considers crop would have been treble with plenty of urine; fed with ewes and lambs in spring; yielded two crops, one of seed; 172 bushels off 3 acres.—G. Wood, Esq.

12. *Heath upon Hard Native Soil.*—Sown October; dressed with farm-yard manure ploughed in, and guano dissolved in water; two green crops six weeks apart; a third crop of seed; grass very long, and now feeding it off (September 17)—Lawrence Wylie, Esq.

13. *Light Black Mould upon Yellow Sandy Loam and Gravel.*—Sown September; dressed with cows' urine, house drainage, soapsuds, water-closets and farm-yard water. Four crops: April 14, June 8 (cut too late, and made into hay); August 6, for seed; and, September 10, grew so strong, and so covered the land, it killed all the weeds. First crop 2 feet high, and as thick as it could stand upon the land; was *ready earlier than rye on one side of it, and lucerne on the other.*—Robert Gunter, Esq.

14. *Light Soil, and various Subsoil; Light Surface upon Sandy Marl.*—Sown October; drained 3 feet; dressed with farm-yard dung before sowing, and with urinal dressing after each cutting; three crops, 3 feet each.—W. Heap Hutchison, Esq.

15. *Sandy Loam upon Clayey Chalk Marl.*—Sown October; drained 3 feet deep; no dressing, no urine; three crops up to August 23, each 2 feet 4 inches high.—G. Gilliatt, Esq.

16. *Loamy Subsoil, Stiff and Sandy.*—Sown September; drained 2 feet 6 inches; no manure; four crops, 18 to 20 inches high.—Edwin East, Esq.

17. *Light Clay Loam.*—Sown September; not drained; dressed with tank-water after cutting; four crops in six months.—Rd. Dyson, Esq.

18. *Clay and Flints, Subsoil Chalk.*—Sown September; *three quarters of an acre;* not drained; lightly dressed with dung; no urine; kept *forty one year-old Southdown sheep from April 22 to May 25*; cut for seed, July 2; produce 37 bushels; cut for horse-food August 15, which it kept twenty-one days; the seed crop made into a stack of hay 30 feet in circumference.—Rev. J. Phelp.

19. *Clay upon Gravel.*—Sown end of October; no drainage; no manure, no urine, and wet; one crop half a ton to the acre, and fed once.—R. Allfrey, Esq.

20. *Strong Surface, Clay Subsoil, Stiff Marl on Clay.*—Sown in September; part drained, and part not; dressed on surface with dung, no urine; succeeded admirably in part, and failed in part.—G. Harrison, Esq.

21. *Good Loam, Retentive Subsoil.*—Sown in October; drained 30 inches, and subsoiled; dressed after first cuttings with 10 tons of rotten dung, spread on surface; two crops of seed, 20 to 24 inches of grass to each.—W. H. Little, Esq.

22. *Stiff Loam, upon Clay.*—Sown in September; drained 2 feet; London dung ploughed in; no urine, but used nitrate of soda after second with success. Three crops up to September, and partly fed; two first crops produced 6 loads of hay to the acre.—Josiah Hunt. Esq.

23. *Stiff Mould upon Stiff Clay.*—Sown September; partially drained; dressed part with tank-water, part with nitrate of soda, and part with guano. Three crops: April 28, 2 feet 6 inches high; June 1, 2 feet; July 1, nearly 2 feet, and thin.—Jno. Hoper, Esq.

24. *Sandy Loam upon Clay; Fresh Land.*—Sown October; drained 3 feet; no manure, no urine. Three crops: May 1 for hay; July 10, seed; September 8 for seed again, 2 tons per acre. *Each crop of hay double any other crop of grass.*—D. S. Haywood, Esq.

25. *Fresh Common Land upon Clay.*—Sown October; no drainage; no manure; no urine; four crops from April 4 to August 8.—J. Cheal, Esq.

26. *Heavy Loam upon Clay.*—Sown September; drained 30 inches; dressed lightly with turf and night-soil, and watered with cows' urine. Six crops: March 5, May 1,

June 8, July 17, August 19, end of September; each from 2 to 3 feet high.—Jas. Bowley, Esq.

27. *Sandy Loam upon Clay.*—Sown October; partially drained; dressed with stable-dung in October, and watered with urine and water. Four crops, 2 feet 6 inches to 3 feet high, and fed in November.—E. Tattersall, Esq.

28. *Strong Land.*—Sown the last week in October; badly drained; exceeding wet in winter, and hard as bricks in summer; each crop watered with cow-shed drainage. Three crops to July 3: cut in April rather less than 3 loads to the acre; in five weeks rather more than 3 loads to the acre; the third in seed, July 3.—Messrs. Noble and Mee.

29. *Strong Loam upon Clay.*—Sown August; drained 33 inches; dressed with dung and urine, part three crops, part four, and part five; with 14 inches on land in November; in March, 18 inches; May, 33 inches; July, 28 inches; August, 26 inches; one crop of seed.—J. A. Slack, Esq.

30. *Loam, Subsoil Clay upon Sandstone.*—Sown October; drained 2 feet 3 inches: watered, after each cutting, with tank-water, as long as the horses were in stable; afterwards 7 lbs. of guano were put into water-cart, and filled with water. Five crops; March 24, May 19, June 25, August 1, September 7. First, 14 inches of grass; second. 2 to 3 feet; third, 3 to 5 feet; fourth, same; fifth, 18 to 24 inches. Part of second crop, cut and weighed green, 16½ tons the acre; dried and made into hay, 4½ tons. Part of third weighed with the same result; fourth equally good; first and fifth estimated each at half.—W. R. Stansfield, Esq., M. P.

31. *Clay upon Clay; Strong Clay upon Yellow Clay.*—Sown September; not drained; dressed with stable manure before sowing; three crops, 18 to 20 inches high.—Messrs. J. and E. Walker.

32. *London Clay.*—Sown September; badly drained; dressed with slaked lime. In September fed with sheep, and one crop of grass 3 feet high. One or two lands watered with urine, with no better effect.—E. Spencer Trower, Esq.

Copy of a Letter from Captain Buller to W. Dickinson.

Sir—I think I can give a satisfactory answer to your inquiries respecting the Italian rye-grass. The 20 bushels of seed which you sent to me last year were sown, at three different periods, on 6 acres of ground, part of my farm at Whimple, in the county of Devon, half way between Honiton and Exeter. The ground is of moderate quality, on the red sandstone formation, worth from 35*s.* to 40*s.* [twenty-four cents to the shilling] per acre rental. This particular field had been only partially drained. In 1843 it was sown with barley and clover-seed; and in 1844 and 1845 it had been three times mown. In July, 1845, I ploughed it, and made what we call a bastard fallow. On the 13th of September, I manured 2½ acres with 13 cwt. of Ichaboe guano, and sowed 8 bushels of grass seed. On the 27th of September, I manured 2½ acres more, and sowed 6 bushels more seed; and early in October I sowed the remaining acre in the same way.

The seed first sown came up remarkably well, and soon covered the ground with a luxuriant herbage. The second and third sowings were much thinner in the plant, and much less vigorous in appearance all through the winter. Still the whole field was of a luxuriant colour, and the appearance of the crop was much remarked by agriculturists in the neighbourhood. In the spring it grew most vigorously, but the excessive wet made it difficult to know what to do with it. However, on the 23d of March we began to stock it with sheep. The grass was then about 18 inches high. The sheep were frequently removed in consequence of the rain, but an account was kept of the numbers and of the days; and by this account it appears that 2½ acres of grass kept fifty-three sheep and forty-eight lambs for fourteen days between the 23d of March and the 2d of May. On the 2d of May we began to mow the remaining 3½ acres for the horses and bullocks in the yard. The produce kept eight large cart-horses, four feeding bullocks, and one bull, for thirty-five days. The horses were in constant work, and both horses and bullocks were kept exclusively on the grass: they appeared to like it, and did well. I should state that the bullocks had been previously kept on mangold-wurzel and hay, and the horses on hay, carrots, and corn.

In May I had the grass from one square rod of ground cut and weighed. The weight was 144 lbs., or 10½ tons per acre. We finished mowing on the 6th of June, when the grass was left for seed, which we began to cut on the 2d of July. The seed was cut as it ripened; and, the weather being fine, it lay in the swarth for one whole day, when the mowers quietly gathered it into small bundles or sheaves, tying it with the grass itself, which was about three feet in length.

As the seed shells very easily, I had provided some coarse cotton sheeting, which cost about 4*d.* a square yard, and had it stitched together in two pieces of about 20 feet square.

These were laid down in the field, the sheafs nearest at hand laid on the sheeting, and lightly tapped over with the flail. The process is very simple, and two men and a boy will in this manner readily thresh three acres of seed in a day. It is necessary, however, to be very careful both as to the time of cutting and the time of tying up, or otherwise the best of the seed will be lost.

The five acres yielded 96 bushels of clean seed, and the remaining acre about 19 bushels—total, 115 bushels.

As soon as the seed was threshed, it was put into bags and taken to a large loft, where it was spread thinly over the sheets on which it had been threshed. It has a strong disposition to heat, and a man was constantly employed in keeping it turned, while in fine weather it was taken out and dried in the sun.

As soon as the seed had been cut and the ground cleared, the field was manured, part with good rotten dung at the rate of 10 loads per acre, part with liquid manure from the farm-tank, and the remainder with guano at the rate of 4 cwt. per acre; of these, the guano seems to be most efficient and the solid manure least, but I rather think the liquid manure had been too much diluted. At this moment (Sept. 2d) the grass is again running up for a second crop of seed, and may probably be fit to cut by the latter end of this month.

There were about five loads of straw, apparently of excellent quality, and not much inferior to hay.

I will now give an estimate of the cost and the produce of the crop. It is an estimate only; but I shall state each head, both of expense and return, separately, and others may form their own opinion, and correct what may appear to them erroneous.

In estimating the keep of large cart-horses at constant work at 7*s.* per week, I think I am under the mark, and I much doubt whether I usually keep my horses during the month of May for less than 10*s.* per week. In this, however, as in other respects, circumstances vary, and the correction is easy.

Dr.	£	*s.*
3 ploughings, 6 acres, at 7*s.* per acre	6	6
Rolling, dragging, working, and sowing, at 7*s.* per acre	2	2
1 ton 12 cwt. of Ichaboe guano, at 8*l.* per ton	12	16
20 bushels of seed, at 8*s.* per bushel	8	0
Carriage of ditto	0	10
Mowing, threshing, and carrying, at 10*s.* per acre	3	0
Sheeting	1	10
10 loads of manure, at 7*s.* per load	3	10
1 ton of guano	8	0
Watering with liquid manure	0	15
1 year's rent, rates, taxes, and tithes	16	10
Total	£62	19

Cr.	£	*s.*
53 sheep, 14 days, at 6*d.* per week	2	13
48 lambs ditto at 3*d.* per week	1	4
8 horses, 4 feeding bullocks, and 1 bull, 5 weeks, at 7*s.* per week each	22	15
115 bushels of seed, at 8*s.* per bushel	46	0
5 loads of straw, at 25*s.* per load	6	5
Total	£78	17
Expenses	62	19
Balance	£15	18

To this must be added the crop of seed now ripening, worth at least 20*l.* (say)	£20	0	0
Straw	3	0	0
And a further crop of grass to be cut in October, or left as keep for sheep in the spring (say)	6	0	0
	6)44	18	0
Profit per acre	£7	9	8

I have estimated the seed at 8*s.* per bushel, that being the price that I paid to you last year, but, by inquiring this day in London, I find that the present market price is 11*s.* 6*d.* per bushel.

In the spring, I intend to plough for oats. It is to be observed that so rapid is the growth of this grass that no weed can live or can seed with it. The ground seems perfectly clean, and I consider that in condition it has much improved, and that it will be in excellent order for oats.

Much as my expectations were raised by what I saw on your farm last year, I have no reason to be disappointed with the present experiment, and I am now about to sow nine acres more for another season. At the same time, I think there is one thing which, not being attended to, is likely to occasion frequent disappointment in the growth of

Italian rye-grass. I think it is not generally sufficiently considered that no plant which yields an unusually large and valuable produce can be grown without an unusual supply of manure. No land will support, without exhaustion, crops of extraordinary burden with the ordinary supply of manure. I believe this rule to be without exception, and not applicable to Italian rye-grass alone, but to all heavy and at the same time valuable crops. I am led to this remark by what has already occurred, for, when I have been asked what dressing I have used, and mention 9 cwt. of guano per acre, the reply has always been, "Is not this enormous?" To which I can only answer—"Look at the produce."

From what I saw at your farm last year, as well as from my own experience in this, I have a full conviction that upon good deep heavy soils, with abundance of manure, and especially liquid manure, it is possible to grow 40 or even 50 tons of rye-grass per acre in a single season; and if so, the question for a practical agriculturist is, What is the value of a ton of rye-grass, and what is the value of a ton of manure? and he will then be able to say how many tons of manure he can apply with a prospect of profit.

It seems especially calculated for deep heavy lands near the farm-yard. A capacious liquid-manure tank, with a liquid-manure cart so contrived as to take out the liquid-manure and bring back a load of cut-grass, would greatly increase its value, and in the absence of these guano will be found no bad substitute.

I am, sir, yours, very faithfully,
T. W. BULLER.

15 Sussex Gardens, London, *Sept.* 2, 1846.

These practical deductions inform us, my Lord, that this valuable plant may be grown upon almost every kind of soil by judicious treatment with unbounded success; and it may be interesting to know the loss of weight by drying it. A yard of grass was cut for Captain Buller, September 19, being the fourth or fifth crop of that year, and after seed had been taken, it weighed as grass 5¾ lbs. (12 tons 8 cwt. to the acre); dried twelve days in the air, it became reduced to 2¾ lbs. (5 tons 18 cwt.); hung up three days in a kitchen, with 65 to 75 degrees of heat, it became 2 lbs. 10 oz.; then roasted in a sack before the fire till it would rub to powder in the hand, it weighed 2 lbs. 6½ oz. (5 tons 3 cwt. the acre).

No. 1. The hot limestone entirely failed.

No. 2. produced, without manure, solid or liquid, up to the first week in August, 5 feet 6 inches of grass.

No. 3, sand upon sand, produced without liquid but little at Woburn, while in Warwickshire (Nos. 4 and 5) it produced seven crops by September 14, and in Devon (No. 5) a net profit of 7*l.* 9*s.* 8*d.* per acre, with the enormous outlay of 13 cwt. of guano to the acre.

Nos. 6 and 7. Two growers have sown the plant in sand upon stone-brash without success; pains seem to have been taken in these cases; it must be said to have failed in both, and this is the only soil in which it has not generally succeeded.

Nos. 8 to 13. Sand upon gravel. All remunerating crops except No. 8. The whole of these soils were unlikely to produce good crops in so hot a summer, and perhaps many of them would have grown very little grass of any other kind.

Nos. 14 to 18. Light soils, various subsoils: none less than three, and most of them four crops in six months.

No. 19. Clay upon gravel; no drainage, very wet, no manure, no urine, very little produce.

Nos. 20 to 30. Loam upon clay. Three, four, five, six crops have been obtained from these soils; the better drained have been most successful. The produce from No. 30 is well worth close attention; for while 7*l.* 9*s.* 8*d.* net profit per acre has been obtained from No. 5, with 13 cwt. of guano to the acre, a much larger quantity has been produced in Yorkshire by a small quantity of guano reduced to liquid; 18 tons of hay, or 66 tons of grass, per acre, being the amount of produce.

Nos. 31 and 32 are London clays, without drainage, with bad crops. Upon this soil, moderately underdrained, my experiments were commenced and have been carried on. I have never failed to produce every year, from a portion of grass not kept for seed, from seven to ten crops. I have known five produced in one summer without a single atom or drop of manure. I have found the plant sickly and weak where my subsoil was wet, healthy and vigorous where it was dry. I have been convinced for some time it luxuriates in a dry subsoil rather than not retentive, that it will grow rapidly in the strongest clays if not poisoned with stagnant water, that it grows fast in any light soil

well irrigated with liquid manure. I have grown it in sand from the sea-shore, moistened with liquid manure. The dressings I should place in the following order: Urine decomposed in a close tank, one-third urine, water or dung-water two-thirds, guano dissolved 2 cwt. or 3 cwt. in 3300 gallons of water for an acre, during the months of March and April; if the surface of the land be wet, the guano may be used solid, as the cart injures the plant in wet weather, and then I should advocate a larger quantity. In June, July, and August, I think nitrate of soda, 2 cwt. dissolved in 3300 gallons of water to the acre, or powdered only, will be found an excellent dressing.

As the sun loses its power, I would again adopt the warmer manure—urine or guano. I do not place guano as an equivalent to urine; I place it as a substitute when urine has not been saved in sufficient quantity. It may be had in large quantities upon every farm: by taking as a preliminary step the construction of tanks, and draining the stables, cattle sheds, piggeries, men's urinals, privies and water-closets of dwellings, into them, before the land is ploughed to sow the seed, a larger quantity is collected than is usually calculated. I think no man has, in the first instance, made tanks enough to contain the urine made on his farm during the winter months to be applied during the summer.

Knowing something of the value of urine, and the profit to be derived from it, I am the more anxious to induce others to try it, and will therefore take this opportunity of saying something about the mode I have adopted to collect it, and the expense of the tanks to retain it, which may be useful to those who have not yet set about so important an operation in agricultural pursuits.

My land is clay, 250 feet deep; in this soil only have I had experience, so for this only do I prescribe. Having well considered where the liquid is to be used as well as where it is made, and resolved upon the most convenient situation, I have a hole dug full 7 feet in diameter and 12 feet deep, the bottom being shaped like a basin, and well rammed with a little water into good puddle. The construction of the tank is commenced by the bricklayer forming a circle with bricks (4 inch work) round an opening of 5 feet, leaving a space behind the brick-work to be filled and rammed well in with clay-puddle by the labourers as the building is worked up, no mortar being used with the bricks or anything else till the dome is to be formed; mortar or cement is then required, the roof is arched in, a man-hole left in the centre of each tank, and covered with a 3-inch yellow deal cover (2-inch oak would be better). One of these tanks, containing 1000 gallons, costs 2*l.* 17*s.* 6*d.* in the following items, calculating to farmers who have the horses and carts in possession:—

	£	*s.*	*d.*	
Two farm-labourers, each ½ day	0	2	0	Occupied in digging the hole, carting away clay, preparing puddle, and ramming.
Two labouring lads, each 1 day	0	3	0	
One man, 1 day	0	2	0	
Two others, 1 day	0	5	0	
One bricklayer, 1 day	0	4	6	
One ditto labourer, 1 day	0	2	6	
Three horses and carts drawing away ¼ mile, for want of nearer shoot, ½ day	0	4	6	
8 feet of 3-inch deal for cover, at 5½*d.* per foot	0	3	8	
Labour and nails	0	0	10	
Lime and sand for man-hole	0	2	6	
900 place bricks	1	7	0	
	£2	17	6	

Several of these tanks should be made adjoining each other; they then form a most excellent filter to keep back any hay or straw that would prevent the

egress of the liquid from the water-cart, receiving it into the first from the stables, and pumping it out of any other one of them. It must be observed, also, the tanks being formed, the drainage into them is the next feature to be considered. I have adopted a mode economical and effectual by laying down in the pavement what is called at the iron-works an angle-iron gutter of very small size, and covering the surface of it with a flat iron bar, just to lay within the surface of the gutter, wherein all the urine is received and conveyed away immediately, and all the straw, dung, and dirt are kept out. This is highly advantageous, as the urine is conveyed away immediately, without escape of ammonia, and the little gutter may be uncovered as often as you please, and swept out with a broom. There is no under-drain to get stopped; all can be seen and kept in order by a commonly useful person, without the aid of what is called a tradesman. I should like to see three of these little gutters down a stall, whereby all the urine would be caught; three gallons per day from each moderately-sized horse, more from cart-horses that drink freely, considerably more from cows, and a much larger quantity from pigs than is usually calculated. If all the water is caught from farm-horses, cows, pigs, farm-servants, and household servants, the tanks would be filled very quickly; and whenever the tank containing 1000 gallons of urine is filled the second time and properly applied to Italian rye-grass, the result will show it is not too high an estimate to calculate the tanks and drains paid for. The first application will convince the grower of ten acres of this grass that his present stock is insufficient to eat it. He must add to it, and thereby increase the quantity of urine considerably, and so go on to keep a much larger farming stock altogether. The often-asked question, "How shall I obtain urine enough?" will cease to be asked, and the amount of solid fæces so much increased as to obviate the necessity for a constant outlay of capital to procure it. I have the honour to subscribe myself, my lord,

Your lordship's very humble servant,

WM. DICKINSON.

7 Curzon Street, May Fair, London.

WHAT FARMERS' SONS SHOULD LEARN AT SCHOOL.

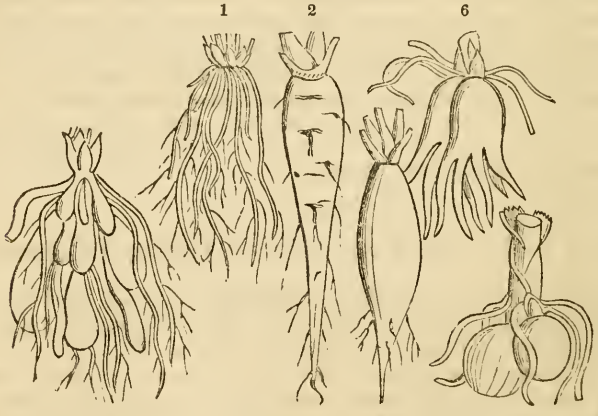
There are some who will affect to consider it at least superfluous if not impertinent to describe the meaning of, and the difference between Annual, Biennial, and Perennial grasses and plants. But we think we know what we are writing about, when we undertake to aver, that a very large number of men, young and old, if called upon, cannot intelligibly and intelligently, define the difference between them, and more especially the essential characteristics.

We have heretofore called attention to and recommended Gray's Botanical Text Book, published by Mr. Putnam of New York; we now make room for three sections of it, with illustrations explanatory of what constitutes an annual, a biennial, and a perennial, and call upon any farmer of good sense to say whether this is not a sort of information that ought to be imparted to all sons of farmers, as well as *it is now* taught in our military academies at the expense of the farmer.

"*Annual Roots* are those of a plant which springs from the seed, flowers, and dies the same year or season. Such plants always have *fibrous* roots, composed of numerous slender branches, fibres, or rootlets, proceeding laterally from the main or tap-root, which is very little enlarged, as in Mustard, &c.; or else the whole root divides at once into such fibrous branches, as in Barley (Fig. 1) and all annual Grasses. These multiplied rootlets are well adapted for absorption from the soil, but for that alone. The food which the roots of such a plant absorbs, after being digested and elaborated in its leaves,

is all expended in the production of new leafy branches, and at length of flowers. The flowering process and the maturing of the fruit exhaust the vegetable greatly (in a manner hereafter to be explained), consuming all the nourishing material which it contains, or storing it up in the fruit or seed for its offspring; and, having no stock accumulated in the root or elsewhere to sustain this draught, the plant perishes at the close of the season, or whenever it has fully gone to seed.

"*Biennial Roots* are those of plants which do not blossom until the second season, after which they perish like annuals. In these the root serves as a reservoir of nourishing, assimilated matter; its cells therefore become gorged with starch, vegetable jelly, sugar, &c. Such thickened roots are said to be *fleshy*, and receive different names according to the shapes they assume. When the accumulation takes place in the main trunk or tap-root, it becomes *conical*, as in the Carrot, Fig. 2, when it tapers regularly from the base or crown to the apex; it is *fusiform* or *spindle-shaped* when it tapers upwards as well as downwards, as in the Radish, Fig. 3; or *napiform* or *turnip-shaped*, when much swollen at the base, so as to become broader than long. If some of the branches or fibres are thickened, instead of the main axis, the root is said to be *fasciculated* or *clustered*, as in Fig. 4; or *tuberiferous* or *tuberous*, when they assume the form of rounded knobs, as in Fig. 5; or *palmate*, when the knobs are branched, as in Fig. 6. These must not be confounded with tubers, such as potatoes, which are forms of stems. Most of these are biennial. Such plants (of which the Radish, Carrot, Beet, and Turnip, among our esculents, are familiar examples) neither flower the first season, nor even expend in the production of stems and branches much of the nourishment they generate; but, forming a large tuft of leaves at the very surface of the ground, they accumulate in the root nearly the whole summer's supply of nourishment. When vegetation is resumed the following spring, they make a strong and rapid growth, shooting forth a large stem, and bearing flowers, fruit, and seed, almost wholly at the expense of the accumulation of the previous year; this store is soon consumed, therefore; and the plant, meanwhile neglecting to form new roots, perishes from exhaustion.



"*Perennial Roots.* A third class of herbs, and all woody plants, do not so absolutely depend upon the stock of the previous season, but annually produce new roots and form new accumulations; sometimes in separate portions of the root, as in the Dahlia or the Orchis (Fig. 5), where, while one or more of such reservoirs is exhausted each year, others are providently formed for the next year's sustenance; and so on from year to year; a portion annually perishing, but the individual plant surviving indefinitely. More commonly, the whole body and main branches of the root are somewhat thickened; or portions of the stem may subserve this purpose, as in all tuberous herbs; or the nourishing matter may be widely distributed through the trunk, as in shrubs and trees. These are some of the modifications in this respect of *perennial* plants, which survive, or at least their roots, and blossom from year to year indefinitely."

THE BALDWIN THEORY.

We give place with pleasure to the inclosed communication from Doctor Baldwin. Should the theory it maintains be finally established, the discovery will constitute a very striking epoch in agricultural annals. Who has not observed in the midst of the poorest old fields, luxuriant growths of grass coming up through its branches where a bush lies covering the ground? While we should like to know what the scientific have to say to this theory, we have understood that the plain practical farmers in the valley, now believe they can make their lands rich by shading them with anything; accordingly, they are covering them with brush, straw, and clover, finding, as it is said, the raw material better and more profitable than the manufactured article, that is, *the shade* to be better than *the manure*.

WINCHESTER, *September*.

DEAR SIR: I submit for the consideration of your agricultural readers a few plain propositions. If you are possessed of any facts, which create a doubt of the truth of any one of them, I shall be pleased to see them stated in your journal.

Proposition 1st. Of the various changes which vegetable and animal substances undergo, during their decomposition, the product of the one only which has proved to be the aliment of plants is the residue of putrefaction.

2d. Each change is a distinct and peculiar chemical process, differing not only in the circumstances requisite to produce it, but also in the nature and chemical composition of each product.

3d. The value of each product depends very materially, upon the attention paid to the circumstances necessary to generate each peculiar process. This is known to be true with regard to the vinous and acetous fermentations, and is equally true with regard to every other.

4th. That a close, cool, dark, and damp location, with a contact of air, is indispensable to the generation of the putrefactive process. All organic substances experience this change only, when thus located.

5th. No substance whatsoever will undergo the putrefactive process, when exposed to heat, light, and a free circulation of air.

6th. That decay, or eremacausis, is a distinct chemical process, differing essentially from the putrefactive, in the circumstances which produce it, as well as in the quantity and quality of the product, which is invariably destitute of fertilizing virtues.

7th. Putrefaction may be considered the ultimate result of vegetable and animal decompositions, because it forms the only product incapable of any other chemical change, and is consequently indestructible.

8th. That the excrement of animals is not manure. Like the bodies of animals, it never becomes the food of plants until subject to putrefaction.

9th. That the value of manure materially depends upon the perfection of the putrefactive process; that is, the strength or fertilizing qualities of the manure may always be estimated by the density and duration of the shade to which it has been subject.

10th. That the surface of the earth itself will readily undergo the putrefactive process, if favourably located, that is, if densely shaded, which of necessity implies a cool, dark, close, and damp location.

11th. That the fertility imparted to the earth by shade, that is, manure made of the earth itself, is more durable, and therefore more valuable, than that made of any other substance whatsoever.

12th. It is not true that the impoverished condition of any soil proceeds from a deficiency in one or more of its mineral constituents, because all soils, alike, may be made exceedingly fertile by *shade alone*.

Yours, respectfully,
R. T. BALDWIN.

CAUSES OF THE DIFFICULTY BETWEEN THE NORTH AND THE SOUTH.

We take the following from the Alabama *Planter*, desiring that our readers should peruse it carefully, and afterwards re-peruse the letter of Mr. Carey, given in our last number, with a view to see how perfectly it corroborates his view of the causes of the present difficulties between the Northern and Southern portions of the Union.

"No one can doubt that there is a manifest falling off in the product per acre of cotton, and this reduction tells heavily on the *cost* of production per pound; and unless a great change takes place in some respect, this increased cost of production and lessened amount produced per acre are both to go on to an indefinite extent, until their combined influences shall enable other countries, by the stimulants of pressing demands and increased prices, to take from us the monopoly that we now possess in supplying the markets of the world with this article, and we thus lose the high vantage-ground we now occupy. To us it is a matter of much greater moment to cheapen the cost of production than increase its amount, and to this end we should keep our attention steadily directed to new or improved modes of cultivation, productive and valuable varieties of cotton, increased fertility of land by manuring, draining, and the like, added to increased facilities for transportation by means of railroad, plank and Macadamized roads. These must all contribute to this end. This consideration gives new and additional force to the reasons for pushing forward with vigour enterprises for facilitating the trade of the country. It requires no argument to show that if I can get a bale of cotton to market for fifty cents less than formerly, that I either save that fifty cents, or am able to put it in market for that much less, and thus my position as a producer is made stronger to that extent. Improving lands by manuring, draining, &c., has, then, besides the intrinsic value added to them by these means, the additional advantage of increasing the production of the district or country, and by this means concentrating capital and production sufficiently to enable it to carry out improvements: thus each assisting the other in rendering the country strong in its capacity of producing and bringing into market, at the lowest possible rates, an article indispensable to the world in its present state, and most likely to continue so for a long period to come. These considerations make it desirable that our people should, instead of pushing far west into new regions, with bad roads, sparse settlements and a thousand evils and disadvantages of a new country, remain where they are, improve their old lands where they have lands, or, if they have none, select the most suitable lands, new or old, they can procure, as near as they can to the lines of some of the improvements now making; improve or preserve them, and stay there—after a while they will be valuable."

This advice is excellent, but why is it that it is never heeded? why have not these things long since been done? why should the planter have been all this time exhausting his land? It is because they have been determined to lend their aid in maintaining the British *monopoly of machinery;* with a view to the establishment of that the political economists of England sought to have "free trade." Had they united with their agricultural friends of the Middle States in the effort to make a market on the land for all the products of the land, the planting States would be filled with mills and furnaces, shoemakers, hatters, carriage-makers, and wagon-makers, and they would themselves be so rich that they would pity instead of envy the poor people who, for want of better employment, have been obliged to go to California to dig gold.

Half a century since the farmers of New York made large crops of wheat. The average per acre has now fallen to less than fourteen bushels, and the reason of the change has been that making no market on the land for the products of the land, they wasted the manure on the roads and in distant markets, and spent the money yielded in sending their sons from home for that education and employment which they could find at home, if employments were diversified.

A quarter of a century since, the farmers of Ohio made large crops of wheat. The average is now about ten bushels, and it decreases yearly. The reason

for this is that instead of making their cloth and linen at home, consuming on the land the products of the land, they send their wheat to a distance to be eaten by men who make their cloth and linen; and much of these which they consume is made by the consumers of wheat made abroad by men who live on *"pumpernicle."*

Michigan now tells us of its great crops of wheat, as will be seen by the following, which we take from one of the journals of the day.

A correspondent of the Detroit Daily Tribune, writing from Romeo, Michigan, states that Ira Philips, Bruce, Macomb Co., last week harvested and threshed from two acres of ground, one hundred and twenty-four bushels of wheat. The wheat crop of Macomb county, and indeed of all Michigan, will be unprecedentedly large.

Unless the people of Michigan determine to make a market on the land that shall enable them to return to the land the refuse of its products, the course there will be the same that we see it to have been in New York, Ohio, and Virginia, and then the agricultural reports twenty years hence will be filled with complaints of the rapid decline in the quantity of their crops, and perhaps with suggestions of the formation of county and State societies and the offer of premiums to be given to the man here or there who can then, by the aid of improved agricultural science obtain crops *almost* as large as those which are now obtained *in the* natural way. It is really time that the farmers of the country should open their eyes to the fact that the great prize to be offered to the farmer is *a market* not only for his wheat, but for his potatoes, his cabbages, his milk, his veal, and the thousand other things that will not bear transportation to distant markets. Instead of which the farmers of New York are taught to reject the only journal which undertakes to point to the true source of agricultural disorder and its only remedy—out of the city of New York the Plough, the Loom, and the Anvil has not one hundred readers in the State—whereas, were Governor Clinton alive, he would tell them, as Mr. Samuel Lawrence, and Mr. Phinney of Massachusetts, and Mr. Cockrill of Tennessee have written—that it ought to be read *by every man, woman, and child, in the country.*

RAILROADS IN NEW ENGLAND.—The increase to the productive power and wealth of New England, resulting from her *railroads*, is beyond all power of calculation, because one can't fix upon the elements of the calculation. For instance, what credit is to be given for the increase in the quantity of transportation and of manufacture by the power of steam over animal power? and, then, what allowance to be made for the *saving of time*, where all travel at the rate of at least twenty miles an hour? Suppose one man to travel, sleeping and waking, as far in twenty-four hours by steam, as he could travel in a stage in five; has he not saved four days; in other words, as to that time, was not one man equal to five. Let this, then, be carried out, and we behold the secret of the prodigious increase in the population and wealth of the New England States. It's only idle people who can afford to walk for nothing when they can travel by steam at two or three cents a mile. Suppose a man at Springfield, Massachusetts, and he can jump into a car, at several hours in the day, and go at the rate of at least twenty miles an hour—EAST, to Boston, 98 miles; WEST, to Troy, New York, 108; NORTH, to Haverhill, 66; or SOUTH, to New York, 138—passing by and through, on every route, a village or a station, to let out and take in, at an average of not exceeding five miles from one end of every route to the other! With such a people, it is the "free trade" they *enjoy with each other*, and in our own country—the domestic trade—that is so valuable. It is that which augments the elements of commerce, while it diminishes the necessity for distant transportation. "Free trade" with foreign powers enhances the necessity for the means of transportation, while it much diminishes the power of producing the things to be transported and exchanged. The world is waking up to a perception of this great truth. Nothing but party spirit and a slavish subjection to the colonial system of England, though not aware of it, has blinded us to it heretofore.

THE PROSPECTS AND PROGRESS OF AGRICULTURE IN NORTH CAROLINA.

Scotland Neck, N. C.

We have fine prospects of a corn crop now; also, pea crop. The cotton crop, though little is planted, never was better.

Considerable improvement in agriculture has been going on now for thirty years; more rapidly, however, within the last six or eight years, for which we are mainly indebted to Mr. T. P. Deveraux, a *book farmer*—that is to say, he commenced, some eight or ten years back, without any practical knowledge, yet has succeeded admirably in reclaiming swamp lands, cultivating clover, and especially by sowing peas broadcast, and applying gypsum one bushel to the acre. His example is now followed by many others with unequivocal success. Lime has also been introduced, within the last four or five years, with the same happy results attending its use elsewhere. By late information from Florida, the cotton crops were unusually promising, and no appearance of the worm up to the beginning of this month. The corn crops were scant. Sugar crops very good.

I have been a warm advocate for the doctrine inculcated in your work, for more than forty years, and it gives me pleasure to assure you that it is *gradually taking root* in the Southern country, and, but for the baneful influence of party, would progress more rapidly. Georgia is taking the lead in manufactures, and especially railroads, of all the Southern States.

With best wishes for the success of your noble work, and a full remuneration of your labours, I have the honour to be, very respectfully,

Your most obedient, &c.,
O. J. BAKER.

If North Carolina would throw away her old smoke-dried looms and spinning wheels, and go in for a policy that would draw the steam or water power loom and the anvil around the plough, instead of coming down from a decennial increase of twenty per cent. to two; and sending away her sons in search of bread to Alabama and Mississippi, there to exhaust the lands as they have done at home, then would she grow and wax fat, as Mr. Deveraux's hogs do in a pea pasture. Then would she manufacture millions of dollars worth of silk, and wool, and wine, and farmers' sons would remain at home to marry their neighbours' daughters. Instead of that, they continue still all at the plough, sending away their crops in search of distant markets, in pursuance of the old smoke-dried maxim, "Sell in the dearest and buy in the cheapest market," and spending more time and money on bad roads, transporting with imperfect machinery, than would build mills, and cocooneries, and wine-presses, to weave their own fleeces, and press their own wine, and manufacture their own silk. But what's the use of preaching to people who go about everywhere singing the old Virginia tune—free trade, free trade—as blind as adders with party prejudice?—*Ed. P. L. & A.*

Cocoa-nut Sugar.—Ceylon newspapers mention a new source of sugar, as likely to be of importance to that colony. The sugar is obtained by cutting off the cocoa-nut flower stem, attaching a vessel to it, and evaporating the liquid; it flows over in quantities so great as to be almost incredible, and I have seen samples of the sugar equal to anything ever obtained from the sugar-cane, and produced in such abundance from a tree as to promise immense returns yearly to the owner of it. Would you kindly state your opinion as to the chances of a tree so bled, living in health for any length of time. A cocoa-nut tree comes to full bearing in seven years, and will continue in vigour for 70 to 100 years, producing from 100 to 300 nuts yearly. I should imagine a tree so tapped would live but a very few years. *J. Mackenzie, M. D., Inverness.* [We do not think that cocoa-nut trees, thus *drained* of their blood, will long remain in health. They will, however, endure tapping in moderation.]

The Plough, the Loom, and the Anvil.

Vol. III. NOVEMBER, 1850. No. V.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

Few, we think, can read the following chapter of Mr. Carey's "Harmony of Interests" without agreeing with their author in designating as "Satanic" that school of political economy which teaches the separation of the producer and the consumer, and the impoverishment of both. Throughout all the countries subject to it, the man who raises the food and the wool obtains but little cloth or iron in return for his labour; while he who, at home, spins the wool and weaves the cloth—smelts the ore and rolls the iron—obtains but little food, and has little to spare for clothing, the middle-man being enriched at the expense of both. The poor are thus made poorer, and the rich made richer, and this, we are told, is a necessary consequence of *a law of God*, which provides that population shall increase faster than food, and renders it necessary that men and women should perish by famine and pestilence, while of the whole earth there is not at this moment brought into activity a hundreth, if even a thousandth, part of the food-producing power!

Men are taxed and plundered by the middle-men by whom they are governed, and the only remedy provided for their grievances is emigration. They must either starve or abandon their native lands, leaving behind them the homes of their youth, their parents, sisters, friends, to seek in some new land the subsistence that is denied them at home. The woman is forced to remain behind, and thus it is that the sex superabounds at home, starving on the miserable wages usually accorded to female labour, and driven to vice to make up the deficiency, while the colonies are the scenes of vices that universally prevail when the stronger sex are found in excess. Our readers, familiar with the records of the early settlement of the shores of the Mississippi, or the lands of Texas, can scarcely fail to see that demoralization is a necessary consequence of the premature occupation of large bodies of land, and that if they would promote the cause of morality they could adopt no better means for the accomplishment of that end than in teaching the system of concentration, which enriches the farmer by making a market for his products, and protects the morals of his children by enabling them to obtain *at home*, and under the guardianship of the parent, a market for their labour.

Desiring to interest our female readers, and we flatter ourselves that our political economy is of a character to interest a few, at least, of the softer sex, we invite them to a consideration of the condition of a large portion of their fellow women in "the great grain market of the world," as shown in a quotation we shall now offer them from the London *Morning Chronicle*, to which, with many other similar statements, it is furnished by a correspondent, who

desires to draw attention to the miserable situation to which the people of Great Britain are reduced by the insane desire to maintain the *monopoly of machinery*, by aid of which she has rendered herself "the workshop of the world." Having read it, we would desire them to reflect that our whole system, *called free trade*, tends to *compel* our young men to fly to the West, leaving behind them the young women who, destitute of employment near at home, are compelled to fly to the cities, there to become needle-women, and to end in becoming the victims of prostitution. The remedy for all this is to be found in the adoption of a system of policy that will enable the farmer and the planter to draw to their sides prosperous consumers of their products, enabling them to exchange their potatoes and their turnips, their milk and their veal, and their surplus labor, without being compelled to give for a yard of cloth as much cotton as would make half a dozen yards, and for a ton of iron as much food as would feed the manufacturers of ten or fifteen tons; and when the women of the country shall come to see that in the adoption of that course is to be found the true and only remedy for many of the grievances their sex "is heir to," we feel assured that we shall have their influence to aid us in the dissemination of that sound political economy which teaches that, if the farmer, his wife, or his children, would become rich, intelligent, and free, they must make a market on the land for the products of the land:

"'I work at the slop, make trousers—moleskin and cord—any sort of plain work. I work at the same place as the other woman works at, and for the same prices. I earn, like her, taking one week with another, about 3*s.* 4*d.*, and, taking off the candles, about 3*s.* every week. I have been married, but my husband's been dead eleven year. I have had two children, but I've buried them. When he died he left me penniless, with a baby to keep. I was an honest woman up to the time of my husband's death. I never did him wrong. I can lay my hand on my heart and say so. But since then the world has drove me about so, and poverty and trouble has forced me to do what I never did before. I do the best I can with what little money I earn, *and the rest I am obligated to go to the streets for.* That is true, though I says it as shouldn't. *I can't get a rag to wear without flying to prostitution for it.* My wages will barely find me in food. Indeed, I eat more than I earn, and I am obligated to make up my money in other ways. I know a great many women who are situated in the same way as I am. We pretty well all share one fate in that respect—with the exception of those that's got husbands to keep them. The young and middle-aged all do the same, as far as I know. There's good and bad in all; but with the most of 'em I'm sure they're drove to it—yes, that they are. I have frequently heard them regret that they are forced to go to the streets to make out their living.'

"The story which follows is perhaps one of the most tragic and touching romances ever read. I must confess, that to myself the mental and bodily agony of the poor Magdalene who related it, was quite overpowering. She was a tall, fine-grown girl, with remarkably regular features. She told her tale with her face hidden in her hands, and sobbing so loud that it was with difficulty I could catch her words. As she held her hands before her eyes, I could see the tears oozing between her fingers. Indeed, I never remember to have witnessed such intense grief. Her statement was of so startling a nature, that I felt it due to the public to inquire into the character of the girl. Though it was late at night, and the gentleman who had brought the case to me assured me that he himself was able to corroborate almost every word of the girl's story, still I felt that I should not be doing my duty to the office that had been intrusted to me, if I allowed so pathetic and romantic a statement to go forth without using every means to test the truth of what I had heard. Accordingly, being informed that the girl was in service, I made the best of my way, not only to her present master, but also to the one she had left but a few months previous. The gentleman who had brought her to me, willingly accompanied me thither. One of the parties lived at the east end of London, the other in the extreme suburbs of London. The result was well worth the journey. Both persons spoke in the highest terms of the girl's honesty, sobriety, and industry, and of her virtue in particular.

"With this preamble let me proceed to tell her story in her own touching words:

"'I used to work at slop work—at the shirt work—the fine full-fronted white

shirts; I got 2¼*d.* each for 'em. There were six button-holes, four rows of stitching in the front, and the collars and wrist-bands stitched as well. By working from five o'clock in the morning till midnight each night, I might be able to do seven in the week. These would bring me in 17½*d. for my whole week's labour.* Out of this the cotton must be taken, and that came to 2*d.* every week, and so left me 15½*d.* to pay rent and living and buy candles with. I was single, and received some little help from my friends; still it was impossible for me to live. *I was forced to go out of a night to make out my living. I had a child, and it used to cry for food; so, as I could not get a living for him myself by my needle, I went into the streets,* and made out a living that way. Sometimes there was no work for me, and then I was forced to depend entirely upon the streets for my food. *On my soul, I went to the streets solely to get a living for myself and child.* If I had been able to get it otherwise, I would not have done so. I am the daughter of a minister of the gospel. *My father was an Independent preacher, and I pledge my word, solemnly and sacredly, that it was the low price paid for my labour that drove me to prostitution.* I often struggled against it, and many times have I taken my child into the streets to beg, rather than I would bring shame upon myself and it any longer. I have made pincushions and fancy articles—such as I could manage to scrape together—and taken them to the streets to sell, so that I might get an honest living, but I couldn't. Sometimes I should be out all night in the rain, and sell nothing at all, me and my child together; and when we didn't get any thing that way, we used to sit in a shed, for I was too fatigued with my baby to stand, and I was so poor I couldn't have even a night's lodging upon credit. One night in the depth of winter his legs froze to my side. We sat down on the step of a door. I was trying to make my way to the work-house, but was so weak I couldn't get on any further. The snow was over my shoes. It had been snowing all day, and me and my boy out in it. We hadn't tasted any food since the morning before, and that I got in another person's name. I was driven by positive starvation to say that they sent me, when they did no such thing. All this time I was struggling to give up prostitution. I had many offers, but I refused them all. I had sworn to myself that I would keep from that mode of life for my boy's sake. A lady saw me sitting on the door-steps, and took me into her house, and rubbed my child's legs with brandy. She gave us some food, both my child and me, but I was so far gone I couldn't eat. I got to the work-house that night. I told them we were starving, but they refused to admit us without an order; so I *went back to prostitution again for another month.* I then made from 3*s.* to 4*s.* a week, and from that time I gave up prostitution. For the sake of my child I should not like my name to be known; but for the sake of other young girls, I can and will solemnly state, that it was the smallness of the price *I got for my labour that drove me to prostitution as a means of living. In my heart I hated it; my whole nature rebelled at it, and nobody but God knows how I struggled to give it up.* I was only able to do so by getting work at something that was better paid. Had I remained at shirt-making, I must have been a prostitute to this day. I have taken my gown off my back and pledged it, and gone in my petticoat—I had but one—rather than take to the streets again: but it was all in vain.' "

Is it to be believed, that a rational people will be long content to endure a tariff policy which looks to compelling the labour of this country to go down to, ay, and even below, the level of nations thus starved and demoralized, or else, to buy of them our cloth and iron?—restricting our population to the use of the plough, with which, having no diversity of labour, and no customers at hand, they must exhaust both their lands and themselves—being obliged to scatter, thereby *paralyzing* their industry, instead of drawing together and *combining* their powers?—Is it possible that even party spirit, or any spirit but the spirit of infatuation and ignorance, can long blind this nation to the effect of sending abroad for that which she should manufacture at home, making customers on the spot, to the farmer and the planter, of all concerned in working up our own materials?

Can the latter profit by closing our own mills, filled with well-clothed females, good customers for cotton-cloth, and employing in their stead miserable women, who "*can't get a rag to wear without flying to prostitution for it?*"

[*Ed. P. L. & A.*

CHAPTER EIGHTEENTH.

HOW PROTECTION AFFECTS THE FRIENDS OF PEACE.

THE more spades and ploughs employed, the larger is the return to labour. The more perfectly peace is maintained, the greater is the number of persons who may employ themselves with spades and ploughs, the more rapid must be the increase of production, and the larger must be the reward of the labourer and the capitalist.

The more swords and muskets employed, the smaller must be the return to labour. The more wars are made, the greater must be the number of persons employing swords and muskets, the slower must be the increase of production, and the smaller must be the reward of the labourer and the capitalist.

Protection is said to be a "war upon labour and capital." If it be so, it must tend to promote war. We are urged to adopt measures for maintaining *the monopoly system* of England, and are assured that, by doing so, we shall contribute to the establishment of peace. To prove that such would be the effect, it would be necessary to show that the colonial system had heretofore tended to the accomplishment of that great end.

If, however, we examine what has been the cause of most of the wars of the last hundred and fifty years, we shall find that it has been the desire for the possession of colonies whose people could be made "customers," and thus taxed for the support of the country that ruled over them. France had Canada, and she desired the country west of the Mississippi; she had islands in the West Indies, and she wanted more. England had some and wanted more. France and England were both in India, and, to settle the question which should tax the whole, that country was desolated by the march of contending armies during a long series of years. France had colonies to lose, and hence the war of 1793. France wanted colonies in the Mediterranean, and hence the rupture of the peace of Amiens, and the series of wars that closed with Waterloo. Since that time we have had a succession of wars in India for the extension of British power over Ceylon, Siam, Affghanistan, Scinde, and the Punjaub. The chief object of the war with China was that of compelling her to open her ports to foreign commerce, and it was accounted a righteous enterprise thus to compel the poor Chinese to open their eyes to the blessings of free trade. At the Cape, the war with the Caffres has cost millions. France, not to be outdone, seized on Tahiti, and deposed its poor queen; and at this moment makes war on the poor Sandwich Islanders, because they will not permit her to do with brandy as England in China did with opium. One portion of the English nation sells powder to the people of Africa, to enable them to carry on wars in which they make prisoners, who are sold as slaves, while another portion watches the coast to see that the slaves shall not be transferred to Cuba or Brazil. The anxiety for colonies has caused the waste of hundreds of thousands of lives, and hundreds of millions on the worthless Algeria. Thus everywhere it is the same; everywhere the anxiety for trade is seen stimulating nations to measures tending to the impoverishment and destruction of their fellow-men.

The power to make war depends upon the high or low valuation of man. Russia makes war readily, because men are cheap. France supports large armies at small cost. The East India Company's army consists of many hundred thousand men. Men in India are cheap. Belgium supports but a small army, because men are more valuable. England is weighed down by her fleets and armies, because wages are higher than on the continent, and she is therefore compelled to depend on voluntary enlistment. Could the price of men be raised, she would be compelled to dispense with fleets and

armies, and the necessity for colonies would cease to exist. Throughout the world, armies have been large where men were held of small account, and throughout they have tended to become less valuable as armies became more numerous.

The cause of war is to be found in the diminished or diminishing productiveness of labour, as our own experience shows. The increasing difficulty of obtaining the means of support, from 1835 to 1842, produced the dispersion of men that led to the war in Florida, the occupation of Texas and Oregon, the difficulty with Great Britain, the war with Mexico, and the occupation of California; and this latter is now leading us into discussions with Great Britain about the rights of the Mosquito king, which, but for the dispersion to California, would interest us little more than would those of the King of Bantam. The colonial system is with us, as with all, the avenue to war, because it tends to diminish the value of labour and land.

When we look to the internal condition of those nations that, from an anxiety for "ships, colonies, and commerce," have been always engaged in wars, we find it a scene of universal discord. Louis Philippe maintained fleets and armies, engaged at one time in the subjugation of Algeria, and at others in the seizure of Tahiti, and in similar enterprises elsewhere. The unproductive class increased in numbers, and the burden to be borne by the productive class increased in weight until the explosion of 1848, followed by barricades of towns, and by a series of disturbances producing a necessity for increasing still further the number of unproductive consumers, men carrying muskets, required to secure the maintenance of internal peace. England maintains large fleets and armies for the protection of commerce and colonies, and her whole empire is "a scene of rude commotion." At home, we see her chartists attempting revolution; in Ireland, monster meetings and efforts at separation, followed by appeals to arms; in Canada, efforts at revolution, followed by the present determination to effect peaceable separation; in the West Indies, universal discord among the employers and the employed; in India, perpetual difficulties, and everywhere a necessity for maintaining large armies for the purpose of maintaining internal peace, or, in other words, for preventing those who have property from being plundered by those who have it not, and enabling those who are strong to tax those who are weak.

With the gradual diminution in the productive power of the people of England, we see an increase of discord between the employers and the employed; strikes becoming more numerous, and accompanied by more serious results, the destruction of buildings and machinery being added to the injury resulting from long suspensions of labour. In Scotland, the population of whole districts is expelled to make way for sheep, while other districts present to view outrages similar to those exhibited in the lands further South. In Ireland, we see a scene of almost universal war, the land-holder in one place expelling his tenants and destroying their houses, while in thousands of others tenants are seen carrying off and secreting their crops, to avoid the payment of rent.

If we look at home, we see similar events resulting from every attempt to throw down the barrier of protection and assimilate our system to that which has produced the ruin of the British colonies. At no period of our history has there prevailed such universal discord among employers and employed as during the last few years of the Compromise act. The productiveness of labour was, as we have seen, gradually diminishing, and the employers were unable to pay to the employed such wages as would enable them to obtain the same amount of conveniences and comforts as they had before enjoyed. The year that has now closed has been signalized by the same state of things

throughout the coal region, as labour became less productive. At one time we have had turn-outs among coal operators, and at another among miners and labourers, and the result has been that the year has been one of almost total loss.

If we compare with this the period that elapsed between 1844 and 1847, we see in the latter a steady increase in the productive power, attended by an increasing tendency to harmony among employers and employed, the natural result of improvement of condition.

The exhaustion resulting from the maintenance of the colonial system thus produces a tendency to turbulence and radicalism that compels the maintenance of armies, followed by further exhaustion, and all the injurious results are borne by labour and land. Consumption cannot exceed production, and whatever decreases the proportion which hands to produce bear to mouths to be fed and backs to be clothed, diminishes the share of food and clothing that falls to each. England now raises almost seventy millions of taxes, very many of which are required for the payment of those employed in the work of collecting the remaining millions that are paid into the treasury. To these millions raised by the State must now be added eight millions for the support of one-ninth of the population of England who are paupers, and many more for the support of the paupers of Ireland. Here is a burden of above four hundred millions of dollars, the whole weight of which is to be borne by the labour and land of England and of the world, and ultimately by her land alone. The people can fly, but the land cannot. The power to pay rent depends upon the power to make the land produce, and, as that increases with increase of numbers, and improvement in the physical, moral, and intellectual condition of the labourer, it diminishes with diminution of numbers and deterioration of condition. In the three years ending with 1845, the consumption of spirits, domestic and colonial, amounted to . . . . 23,422,295 galls.
In the three years ending in 1848, it was . . . 25,326,861* "
showing a tendency to inebriation increasing with the diminishing power to obtain in return for labour a suitable reward.

Demoralization produces pauperism, and pauperism increases demoralization, and the inebriate paupers must be supported out of the products of the land. The surplus food of Russia has diminished cultivation in Ireland, and has, of course, diminished production. England is now overrun with Irish labourers and paupers, and what has happened in Ireland must follow in England. More corn will continue to be imported, and more cotton goods will be exported; but the products of the land, out of which rent and taxes are to be paid, will diminish, and, while the mouths to be fed will increase in number, the food with which they are to be fed will continue to diminish in quantity. The corn-laws constituted the barrier of the land-holders of England against the effects of the system by which England was deteriorating the value of labour and land throughout the world. Their abolition tends to bring it daily more and more upon themselves, and the only remedy is to be found in the abolition of the colonial system and the suppression of the fleets and armies which its existence renders necessary. The diminution of unproductive consumers will be attended by an increase of productive ones, and the exports of England will then again represent home-grown food, to be returned in sugar, tea, coffee, and cotton, and with every step in that direction the necessity for taxes will diminish, and the power to pay them will increase.

If we look at home, we see a tendency to increase in the necessity for taxa-

* This fact is adduced by the *Edinburgh Review*, July, 1849, as one of the evidences of the advantage resulting from free trade.

tion with every step towards subjection to the colonial system, and diminished tendency thereto as we move in the opposite direction. The expenses of the government under the administration of Mr. Monroe averaged thirteen millions. Those of the administration of Mr. Adams averaged little over twelve millions. During the existence of the tariff of 1828, and in the early period of the Compromise, we find the expenditure maintained at thirteen millions, but with the gradual dispersion of population we arrive at the Florida war, and an expenditure of thirty, thirty-seven, and thirty-three millions in three successive years, and afterwards falling gradually until we find it at twenty millions in the period of 1843 to 1844. With the adoption of free-trade doctrines, we find an increasing tendency to war, and the expenditure rising to sixty millions. Looking at all these facts, it is difficult to arrive at any other conclusion than that protection tends to increase the demand for spades and ploughs, and the reward of labour, and to diminish that demand for swords and muskets which leads to the destruction of both the labourer and the plough. The friend of peace is therefore directly interested in the destruction of the English monopoly of machinery.

If protection be a war upon labour and capital, we should find it attended with diminished production and increased expenditures. If, on the contrary, it be, as its name imports, protection to both labourer and capitalist, tending to augment the value of the labourer, then it should be attended with increased production and diminished expenditure. We have now before us the fact, that, while the government, from 1824 to 1833, was administered at about one dollar per head, the cost of administration rose in the free-trade period to more than two dollars, to fall again to one in the period of protection, and to rise to almost three in the present free-trade one.* Protection looks homeward. Free trade, under existing circumstances, looks abroad, and needs fleets and armies, with hosts of officers, great custom-houses and warehouses, branch mints in California and New York, ministers plenipotentiary and chargés without number abroad, and hosts of officers at home, to be supported out of the proceeds of labour and land. The one looks to cheap and good government; the other to a splendid one, profitable to the governors, but fatal to the governed.

We have seen that under protection the value of labour at home has increased, and that therewith there has been an increase in the power of consuming foreign commodities, such as we do not ourselves produce. We have also seen that while it tends to increase the importation of people from abroad, it tends likewise to facilitate the transmission to Europe of our bulky commodities, by enabling us to send them at almost nominal freights, and that thus, while it raises the value of labour throughout the world by diminishing the number of persons seeking employment, it also raises it by enabling those who remain abroad to obtain sugar, cotton, coffee, and the other productions of the West, at diminished cost. The way to promote harmony among nations, and in the bosom of nations, is to increase the value of man, and such has been, and must continue to be the result of protection. That object once accomplished, all necessity for custom-houses, whether for protection or for revenue, will cease.

The man who contributes to the support of war makes war, and if he does it voluntarily he is accountable for the results thereof in the deterioration and

* Independently of the amount of money paid for the expenses of the Mexican war and the purchase of California, ninety thousand land warrants have been issued to soldiers who served in the war, giving to them as bounty 13,800,000 acres. Estimating this land at the government price, $1 25 an acre, we have an aggregate of $17,230,000.

destruction of his fellow-men. Of all the people of the world, there are none who have contributed so largely as ourselves to the maintenance of the fleets and armies by which Ireland has been ruined, and war has been carried throughout Europe and Asia. So far as we have done this voluntarily, we are as much responsible for the destruction of life and property in China, Scinde, Affghanistan, and the Punjaub, as the men by whose command these things were done.

We have seen that England produces little to export, yet is she enabled to consume much. The producer obtains little for his cotton, yet the labourer obtains little clothing for the time employed in converting the cotton into cloth. The sugar-planter obtains little iron for his sugar, yet the miner has little sugar for his labour. The tobacco-grower has little cloth for his product, but the spinner can consume little tobacco. The reason for all this is to be found in the fact that between the consumer and the producer stands a host of exchangers, the greatest of which is that which collects taxes to be paid out for the support of fleets and armies. Every pound of cotton that travels on an English railway, contributes its proportion to the £108,000 of taxes paid by the single London and North-western railway, the £68,000 paid by the Great Western,* or some other of the immense sums paid by other railways. Every pound of tobacco pays 3s. = 72 cents, towards the maintenance of the fleets and armies of Great Britain, in addition to its share of the taxes on warehouses, bills of exchange, promissory notes, and of the thousand other taxes paid by the various persons who stand between the producer and the consumer. These men produce nothing themselves, and their taxes must be paid for them by the land and labour that do produce—whether it be foreign or domestic.

England is now the great war-making power of the world. It is by means of the monopoly of machinery for the production of iron, and for the conversion of cotton into cloth, that she is enabled to tax the world for the maintenance of her fleets and armies,† for the prosecution of those wars. To destroy her power to make war would be to bring about peace. Protection tends to limit her power to tax the farmers and planters of the world, and thus to limit her power to raise revenue for the payment of soldiers and sailors, while it tends to raise the value of man, and thus make soldiers and sailors more costly. In both ways it tends to diminish the power to maintain fleets and armies, and to promote the maintenance of peace. Every friend of peace is therefore bound to use his efforts for the destruction of *the monopoly system.*

The London *Times* recently published, with approbation, a letter from the East Indies—from a British officer engaged in the battle of Goodjerat, from which the following is an extract. It is deserving the careful consideration of every man who has heretofore aided in the maintenance of the system :—

"The enemy were in the sands trying to escape, and our men *knocking them over like dogs.* . . Some of our men screamed out, 'They are off!' Fordyce's troops went off at a gallop, our men giving them three cheers—such cheers—*it was a perfect scream of delight and eagerness!* and you may be sure I assisted and yelled till I was hoarse! . . . Every wounded Sikh was either shot or bayoneted (!!) . . I rushed up with a few of the grenadiers, and found four men re-loading their pieces; three were bayoneted, *and I was hacking away at the head of the fourth,* when Compton, of the grenadiers, shot him. The

* North British Review, August, 1849.

† Sir Charles Napier has addressed a letter to the public, which fills five closely printed columns of the Times, upon the subject of the navy and its expenses. The sum and substance of what he says seems to be, "that we have spent about ninety millions sterling during the last twenty-eight years in rebuilding our navy twice over, and now we cannot even find the fragments." Such are the results of the system of "ships, colonies, and commerce."

last shot was fired at an unfortunate Goorer in the camp, who was seated quietly reading their Grunth! . . . We waited at this place about two hours; and I can assure you they were about the *jolliest two hours* I ever passed. I never enjoyed a bottle of beer so much in all my life!"

CHAPTER NINETEENTH.

HOW PROTECTION AFFECTS THE EXCHANGER.

The exchanger stands between the producer and the consumer. He himself produces nothing, although consuming much, in exchange for which he gives only services. He buys a bale of cloth and divides it among the consumers, giving a piece to one and a yard to another, but he makes no change in the quantity or quality of the commodities that pass through his hands. The bale of cloth would clothe as many men, and the cargo of flour would feed as many, without his services, as with them. Nevertheless, the exchanger takes rank before the producer. The merchants of London, of New York, and of Boston, have more influence over the action of government, and over public opinion, than twenty, fifty, or even one hundred times the number of men whose every hour is given to increasing the quantity and improving the quality of things necessary to the use of man.

The reason that such is the case is that the present system of trade tends to increase the *necessities* of the producers for going to distant markets, and to diminish their *power* so to do. When the producer of iron takes his place by the side of his producer of food, the latter exchanges his potatoes, his cabbages, his veal, his milk, and his butter, directly with the former, and obtains his iron at little cost of labour. He is thereby enabled to improve his wagon and his roads, and to go to market cheaply, thus increasing his powers while diminishing his necessities. The more distant the consumer and the producer, the greater must be the quantity of machinery of exchange, and the poorer must be its quality, and every such change in regard to either tends to the impoverishment of the farmer and planter.

Such being the case, it might be supposed that here was a case of discord. The exchangers would suffer by the adoption of measures tending to bring the consumers to take their places by each other. Directly the reverse, however, is the fact. The quantity to be exchanged depends on the extent of the *surplus* that is produced, and that increases with prodigious rapidity as the power of production is increased. The man who produces no more food than is absolutely necessary for his own consumption, has nothing to exchange for cloth or iron. Once fed, he may exchange the whole surplus, whatever it be, and therefore it is that the amount of exchanges increases with such wonderful rapidity when production increases, as was the case from 1843 to 1847.

The larger the return to labour applied to production, the less must be the necessity for seeking employment in the work of exchange, and the less will be the competition in trade. Our cities are filled with young men from the country who would have remained at home among parents and friends, had the cotton or woollens factory, the furnace or the rolling-mill, been there to give them employment; but as it was not there, they have been compelled to add themselves to the already almost infinite number of clerks, hoping, and vainly hoping, to obtain stores or shops for themselves. By bringing the consumer to the side of the producer, such young men would, in future, remain at home to swell the number of producers, and to increase the amount of production, enabling each exchanger to perform a larger amount of business, and to grow rich with the same rate of commission that now keeps him poor

It is asserted that of all the persons engaged in trade, in our cities, four-fifths fail. The cause is to be found in the fact that so many are forced into trade, for want of being enabled to apply themselves to production, and that when there they are exposed to the effects of the enormous changes which result from the existence of the English monopoly system. Iron sells at one time at ten pounds, and soon after at five. The man of small capital, who has a stock on hand, is ruined. Cottons and woollens change in like manner. At one moment England desires to sell iron and cloth in exchange for certificates of debt, and money is said to be plenty. At the next, she asks to be paid, and money becomes scarce. The little capitalist is ruined by the change. The consequence is, that our cities are filled with men who have adventured in trade, and failed.

In England, these disastrous effects are far more widely felt. The country is filled with young men anxious to be employed in any department of trade, for in the work of production can be found no demand for time or mind, unless accompanied with large capital. The consequence is a perpetual strife for obtaining even the means of subsistence, among shopmen, clerks, and journeymen,* while the unceasing changes carry ruin, at brief intervals, among the employers. The last three years have seen to disappear a large number of the principal trading firms in the kingdom, and the exhibits they have made of their affairs afford proof conclusive of the ruinous character of the system. In Liverpool, at one time, there were 7000 houses and stores unoccupied. What had become of those who had been their occupants?

The tendency of the whole system is to produce a *necessity* for trade, and to diminish the *power* to maintain trade. "Commerce," there, "is king," and like other kings, he is exhausting his own subjects. Having plundered and ruined India, the West Indies, Ireland, Portugal, and all other countries subject to his control, he is now doing the same at home. With every step he is diminishing the power of applying labour to production, and increasing the necessity for looking to trade as the only means of employing time, talent, or capital, with constantly decreasing return to all; and hence it is that so large a portion of the people of the United Kingdom desire to escape to other lands, where Commerce, finding in agriculture and manufactures his equals, cannot be king. In his proper place he is most useful, but as master he has always proved a tyrant worse than any recorded even in the annals of Rome. The object of the colonial system was that of making him master, and its effects are now felt at home as well as abroad. The object of protection is to put an end to his tyranny, and to bring him back to his true condition; and among the whole people there are none whose interests are more to be promoted by the accomplishment of that object than those who are now engaged in commerce, because with every step it will increase the amount of exchanges to be performed, without a corresponding increase in the number of exchangers.

* "Fourteen hundred tailors are now in London totally unemployed, and hundreds daily applying for relief to the houses of call; the funds are, however, exhausted. Nine hundred shoemakers out of work have their names on the books, and seventeen hundred are working for half wages. The curriers and leather-dressers are in the same situation. There were never known so many working jewellers out of employ, and meetings of the trade are now holding to petition parliament for protection against the competition of foreign labour."—*Morning Post.*

CHAPTER TWENTIETH.

HOW PROTECTION AFFECTS WOMAN.

With every increase in the value of labour and land, the condition of woman is improved. With every improvement in her condition, she has more leisure to devote to the care of her children, and to fitting them worthily to fill their station in society, giving value to labour and land. If protection be "a war upon labour and capital," it must tend to diminution in the value of labour and land, and to deterioration in the condition of the weaker sex. How far that is the case we may now examine.

Throughout a large portion of this country, the time of women is almost entirely valueless. They would gladly work if they could, but there is no employment but that on the farm, for which they are not fitted. Place in every county of the Union a mill, and there will thus be produced a demand for that now surplus labour, and the workers in the mill will obtain more and better food and clothing, and they will be able to obtain more and better clothing, and education, and books by which to improve their minds, and fit them to fill the station of mothers, to which they will then be called. For want of local employment the young men are forced to seek the cities, or to fly to the West, and thousands and tens of thousands of women remain at home unmarried, while other thousands also seek the cities in search of employment, and terminate their career as prostitutes, because unable to compete with the "cheap" labour of the unhappy subjects of the following article, which I take from one of the newspapers of the day:—

"The distressed needle-women of London have been made the object of a commission of inquiry instituted by the Morning Chronicle. Three gentlemen well known in literature have examined the state of this unfortunate class, and the result is, that there lives in London a body of about 33,000 women permanently at the starvation point; working at the wages of a few pence a day.

"The greater portion of these poor creatures, living, as they do, far beyond the social state, resort to prostitution, as a means of eking out their miserable subsistence; whenever the pressure threatens their extinction, then they turn into the street, and pauperism runs into inevitable vice. Since the disclosures of the Morning Chronicle, many humane persons have forwarded considerable sums of money to the office of that journal for distribution among the most necessitous objects; and Mr. Sidney Herbert has come forward to found a society for promoting their emigration. There is something like half a million of women in excess of men in Great Britain; there is a corresponding excess of males in the British Australian Colonies. The society above mentioned aims to bring these marriageable parties in contact; and it is hoped, that when once it is in operation, government will assist it with funds. It costs some £15 to transport a passenger to Australia. Now, if private benevolence raises a sum of £30,000, this will only relieve 2000 of the sufferers: a mere fraction, whose absence would not be sensible in the metropolis. It would require ten times that amount to lade out the misery to the proper extent, and also to satisfy the wants of the colonists."

"Commerce is king," and such are his female subjects. To the same level must fall all those who are under the *necessity* of competing with them, and such are even now the results of the approach to the system that looks to the maintenance of the English monopoly as being freedom of trade. The compensation for female labour is miserably small, even now, but it must fall far lower when we shall be called upon to settle the account for the modicum of iron, wool, silk, and earthenware that we receive in exchange for all our cotton, tobacco, rice, flour, pork, cheese, butter, *and evidences of debt.*

"So God created man in his own image, in the image of God created he him; male and female created he them. And God blessed them and said

unto them, Be fruitful and multiply, and replenish the earth and subdue it."

Such was the first command of God to man on earth, and, as he does or does not comply with it, he is found a moral or immoral being. If the association of man with his fellow-man tend to the elevation of character and to the promotion of civilization, how infinitely more is such the result of that intimate association resulting from obedience to the command, "Be fruitful and multiply." The relation of husband and wife, and that of parent and child, are both essential to the development of all that is good and kind, gentle and thoughtful. The desire to provide for the wife and the child prompts the husband to labour, for the purpose of acquiring the means of present support, and to economy as a means of preparation for the future. The desire to provide for the husband and the children prompts the wife to exertions that would otherwise have been deemed impossible, and to sacrifices that none but a wife or a mother could make.

The modern school of political economy says, "Be not fruitful; do not multiply. · Population tends to increase faster than food." It prescribes disobedience to the earliest of God's commands. Obedience thereto, in those who are poor, is denounced as improvidence; and to those who are so improvident as to marry, "with no provision for the future, no sure and ample support even for the present," it is thought "important to pronounce distinctly that, on no principle of social right or justice, have they any claim to share the earnings or the savings of their more prudent, more energetic, more self-denying fellow-citizens."* To have a wife for whom to labour, and with whom to enjoy the fruits of labour, is a luxury, abstinence from which is placed high among the virtues. To have children to develope all the kindly and provident feelings of the parents, is a crime worthy of punishment. Charity is denounced as tending to promote the growth of population. To rent land at less than the full price, is an error, because it tends to increase the number to be fed. To clear the land of thousands whose ancestors have lived and died on the spot, is "improvement." Cottage allotments are but places for breeding paupers.

Southey denounced the Byronian school of poetry as "satanic," and so may we fairly do with the school of political economy that has grown out of the colonial system, and the desire to make of England "the work-shop of the world." It teaches every thing but Christianity, and that any feelings of kindness towards those who are so unfortunate as to be poor should still remain in England, is due to the fact that those who teach it have not in their doctrine sufficient faith to practise what they preach.

The direct tendency of the existing monopoly of machinery which it is the object of *free trade* to maintain, is towards barbarism. It drives hundreds of thousands of Englishmen to abandon mothers, wives, and sisters, and barbarize themselves in the wilderness, while of those who remain behind a large portion are too poor to marry, the consequences of which are seen in the immense extent of prostitution and the perpetual occurrence of child murder. In this country it is the same. Of the almost hundreds of thousands of men who have fled to the wilds of Oregon or California, a vast portion would have remained at home with mothers and sisters had the consumer been allowed to take his place by the side of the producer, as he would long since have done, but for the existence of this most unnatural system.

Among the women of the world, there is a perfect harmony of interests. It is to the interest of all that the condition of all should be elevated, and such must be the result of an increase in the value of labour. The object

* Edinburgh Review, October, 1849.

of protection is that of raising throughout the world the value of man, and thus improving the condition of woman. Every woman, therefore, who has at heart the elevation of her fellow-women throughout the world, should advocate the cause of protection.

CHAPTER TWENTY-FIRST.

HOW PROTECTION AFFECTS MORALS.

THE moral man is sensible of the duties he owes to his wife, his children, society, and himself. He frequents neither taverns nor gaming-houses. His place is home.

The more perfect the morality the more productive will be the labour of a community, and the greater will be the power of its members to improve their moral and intellectual condition. If protection be "a war upon labour and capital," it must tend to the deterioration of morality and the diminution of the reward of labour.

The more equal the division of a community between the sexes, the greater will be the power to contract matrimony, and the higher will be morality. The monopoly system tends to expel the men and produce inequality in the number of the sexes, and thus to diminish the power to contract matrimony, thereby producing a tendency to immorality. The object of protection is to enable men to remain at home, and thus bring about equality, which cannot exist where the tendency to dispersion exists.

The more men can remain at home, the better they can perform their duties to their children. The monopoly system tends to compel them to perform their exchanges in distant markets and to separate themselves from wives and children. The object of protection is to bring the consumer to take his place by the side of the producer, and enable them to effect their exchanges at home.

The more directly the consumer exchanges with the producer, the less will be the disposition and the power to commit frauds. The farmer of Illinois has no object in adulterating his corn, because corn is cheap; but the miller of England mixes beans with the corn, because corn is dear. The planter of Alabama would gain nothing by substituting flour for cotton, because the latter is cheap; but the manufacturer of England does so because cotton is dear. The coffee planter delivers coffee. The English shopkeeper substitutes chicory for coffee, because the latter is dear. The inducement to fraud in these cases results from the distance between the producer and the consumer, which it is the object of protection to diminish. The shoemaker makes good shoes for his customers; but he makes indifferent ones for the traders who deal with persons that are distant. The gunsmith furnishes to his neighbours guns that will stand the proof; but when he makes others to be sold in Africa, he cares little if they burst at the first fire. The necessity for maintaining the monopoly of machinery now enjoyed by England leads to frauds and forgeries of every description, with a view to displace the foreign produce and deceive the foreign producer.* The *power* to commit

* As a specimen of this, I take the following from one of the journals of the day:

"We are surprised to see ginghams in market, sent out from England by the house of A. & S. Henry & Co. of Manchester, imitating the above goods in patterns, width, and style of finish. But a most palpable and unfair imitation is in the label, where, preserving the same general appearances as to size, colour of paper and ornaments, the word *Lancasterian* is substituted for *Lancaster*. That the whole is a manifest and intentional counterfeit, there cannot be a doubt. The goods will, undoubtedly, be sold for American Lancaster ginghams, to which they are inferior in firmness of fabric and permanency of colour, to the manifest injury of the profits and reputation of the American manufacturer. —*Boston paper.*

frauds thus results from the distance between the consumer and the producer. Protection looks to bringing them near together, and thus diminishing that power.

The planter who exchanges on the spot with the iron-master and the miller, makes large crops and grows rich, and the gain resulting from successful frauds would be trifling compared with the loss of character. The one who is distant from both makes small crops, which are sensibly increased in amount by the substitution of stones in lieu of cotton or tobacco. The *inducement* to commit frauds here results from the distance between the consumer and the producer, and is diminished as the loom and the anvil come nearer to the plough and the harrow.

The man who makes his exchanges in distant markets spends much time on the road and in taverns, and is liable to be led into dissipation. The more he can effect his exchanges at home, the less is the danger of any such result. The object of the monopoly system is that of compelling him to effect all his exchanges at a distance, and to employ for that purpose numerous wagoners, porters, sailors, and other persons, most of whom have scarcely any home except the tavern.

The more uniform the standard of value, the less does trade resemble gambling. The object of the monopoly system is to subject the produce of the world to a standard of the most variable kind, and to render agriculture, manufactures, and trade, mere gambling. The object of protection is to withdraw the produce of the world from that standard, enabling every community to measure the products of its labour by its own standard, giving labour for labour.

The object of the English system is to promote *centralization*, and its necessary consequence is that of compelling the dispersion of man in search of food.* London and Liverpool, Manchester and Birmingham, have grown with vast rapidity by the same system which has exhausted Ireland, India, and the West Indies. The same journal informs us of the construction of a new town opposite Liverpool, of the great additions to London, and of the absolute necessity for promoting emigration from Ireland, Scotland, and even from England. As each successive province is exhausted, there arises a desire, and even a necessity for adding to the list. Bengal and Bombay having ceased to be productive, Affghanistan is attempted, and the Punjaub is conquered. The ruin of the West Indies is followed by an invasion of China, for the purpose of compelling the Chinese to perfect freedom of trade. The Highlands are depopulated, and Australia is colonized.

Mr. Jefferson held great cities to be "great sores." He desired that the manufacturer should take his place by the side of the agriculturist—that the loom and the anvil should be in close proximity to the plough and the harrow. Mr. Jefferson looked and thought for himself. He had studied political economy before it became necessary for Mr. Malthus to invent a theory of population that should satisfactorily account for the scarcity of food under

* "To those who have never reflected on the subject, it may seem like exaggeration to say that, as a general fact, at least nine-tenths of the lower orders suffer physically, morally, and intellectually, from being over-worked and under-fed; and yet I am convinced that the more the subject shall be investigated, the more deeply shall we become impressed with the truth and importance of the statement. It is true that but few persons die from direct starvation, or the absolute want of food for several successive days, but it is not the less certain that *thousands upon thousands* are annually cut off, whose lives have been greatly shortened by excess of labour and deficiency of nourishment. * * It is a rare thing for a hard-working artisan to arrive at a good old age; almost all become prematurely old, and die long before the natural term of life."—*Combe's Philosophy of Digestion.*

the unnatural policy of England, and thus relieve the law-makers of that country from all charge of mis-government. He studied, too, before Mr. Ricardo had invented a theory of rent, for the maintenance of which it was necessary to prove that the poor cultivator, beginning the work of settlement, always commenced upon the rich soils—the swamps and river-bottoms—and that with the progress of population he had recourse to the poor soils of the hills, yielding a constantly diminishing return to labour—and therefore it was that he thought for himself. Modern financiers have blindly adopted the English system, based on the theories of Malthus and Ricardo, and the perfection of civilization is now held to be found in that system which shall most rapidly build up great cities, and most widely separate the manufacturer from the agriculturist. The more perfect the centralization, the greater, according to them, will be the tendency towards improvement.

Mr. Jefferson was in favour of combined action, as being that which would most tend to promote human improvement, physical, moral, intellectual, and political. That it does so, would seem to be obvious, as it is where combination of action most exists that men live best and are best instructed—commit least crimes, and think most for themselves. There, too, there exists the strongest desire to have protection.

A recent traveller* in the United States, says that "the facility with which every people conscientiously accommodate their speculative opinions to their local and individual interests, is sufficiently demonstrated by the fact, that the several States and sections of States, "as they successively embark in the manufacture, whether of iron, cotton, or other articles, become immediately converts to protectionist views, against which they had previously declaimed."

It is here supposed that the desire for protection results from a selfish desire to tax others, but the persons exclusively devoted to manufactures of any kind are too few in number to affect the elections, and yet wherever mills or furnaces are established, the majority of the people become advocates of the doctrine of protection, and that majority mainly consists of agriculturists,—farmers and planters. Why it is so, may be found in the fact that they experience the benefits resulting from making a market on the land for the products of the land, and desire that their neighbours may do the same. Ignorant selfishness would induce them to desire to retain for themselves the advantage they had gained. Enlightened selfishness would induce them to teach others that which they themselves had learned.

Ignorant selfishness is the characteristic of the savage. It disappears as men acquire the habit of association with their neighbour men. The proclaimed object of the monopoly system is that of producing a necessity for scattering ourselves over large surfaces, and thus increasing the difficulty of association, and the object is attained. "The prospect of heaven itself," says Cooper, in one of his novels, "would have no charm for an American of the backwoods, if he thought there was any place further west."

Such is the common impression. It is believed that men separate from each other because of something in their composition that tends to produce a desire for flying to wild lands, there probably to perish of fever, brought on by exposure, and certainly to leave behind them all that tends to make life desirable. Such is not the character of man anywhere. He is everywhere disposed to remain at home, when he can, and if the farmers and planters of the Union can be brought to understand their true interests, at home he will remain, and doing so, his condition and that of all around him, would be im-

* Sir Charles Lyell.

proved. The habit of association is necessary to the improvement of man. With it comes the love of the good and the beautiful. "I wish," says the author of a recent agricultural address, "that we could create a general passion for gardening and horticulture. We want," he continues, "more beauty about our houses. The scenes of childhood are the memories of our future years. Let our dwellings be beautified with plants and flowers. Flowers are, in the language of a late cultivator, 'the playthings of childhood and the ornaments of the grave; they raise smiling looks to man and grateful ones to God.'"

We do want more beauty about our houses, and not only about our houses but about our minds, and that it may be obtained, we must rid ourselves of a system which makes the producer the servant of the exchanger. Such is the object of protection.

It is most truly said that "there is no friendship in trade." As now carried on, it certainly does not tend to promote kindly feelings among the human race, nor can it do so while the system remains unchanged. The great object of traders appears to be the production of discord. By so doing, England has obtained the supreme control of India. Her journals are unceasingly engaged in sowing discord among the various portions of this Union, and the effort would be successful were it not that there is no real discordance in their true interests.

It is time that the people of Great Britain should open their eyes to the fact that their progress is in the same direction in which have gone the communities of Athens, and Rome, and every other that has desired to support itself by the labour of others. It is time that they should awake to the fact that the numerous and splendid gin-shops, the perpetual recurrence of child-murder for the purpose of plundering burial societies, and the enormous increase of crime* and pauperism, are but the natural consequence of a system that tends to drive capital from the land, to be employed in spindles and

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* "Humanity cries to us from the depths. If we will not answer her, it were better a millstone were tied about our necks, and that we were cast into the sea. Have we no sense of the precipice on which we stand? Have not the books of the prophetess been one by one burnt before our eyes—and does not the sybil even now knock at our doors to offer us her final volume, ere she turn from us and leave us to the Furies? Crime, not stealing, but striding onward. Murders, poisonings, becoming almost a domestic institution among our villages—husband, children, parents, drugged to their final home for the sake of the burial fees. Vice within the law, keeping pace with offence without. Incest winked at by our magistracy from its fearful frequency in our squalid peasant dwellings. Taxation reaching beyond the point at which resources can meet it, so that, at increasingly shorter intervals, we have to borrow from ourselves to make expenditure square with income. Poor Laws extended to Scotland and Ireland, where they were never known before, and new Poor Laws failing in England to check the advance of rates, and the growth of inveterate beggary, until property threatens to be swallowed up by the propertyless, and a terrible communism to be realized among us by a legalized division of the goods of those who have, among those who have not—the fearfullest socialism, the equal republic of beggary. 'Speak! strike! redress!' Three millions and a half of the houseless and homeless, the desperate, the broken, the lost, plead to you in a small still voice, yet louder than the mouthing theories of constitution-mongers. Man, abused, insulted, degraded, shows to you his social scars, his broken members, his maimed carcass, blurred in the conflict of a selfish and abused community.

"We say it must no longer be. We are a spectacle to gods and men—'a by-word and a hissing to the nations.' Savages grow up in the midst of our feather-head civilization, wilder, more forlorn, more forgotten, and neglected than the Camanches, or the earth-eaters of New Holland. Ragged foundlings, deserted infant wretchedness, paupers hereditary, boasting a beggar pedigree older than many of our nobles, grow up from year to year, generation to generation, eat with brazen front into the substance of struggling industry."—*The Mother Country, by Sydney Smith.*

ships, and labour from the healthful and inspiring pursuits of the country, to seek employment in Liverpool and Manchester, where severe labour in the effort to underwork the poor Hindoo, and drive him from his loom, is rewarded with just sufficient to keep the labourer from starving in the lanes and cellars with which those cities so much abound.

That "there is no friendship in trade," is most true, and yet trade is the deity worshipped in this school. In it "commerce is king," and yet to commerce we owe much of the existing demoralization of the world. The anxiety to sell cheap induces the manufacturer to substitute cotton for silk, and flour for cotton, and leads to frauds and adulterations of every description. Bankruptcy and loss of honour follow in the train of its perpetual revulsions. To obtain intelligence an hour beforehand of an approaching famine, and thus to be enabled to buy corn at less than it is worth, or to hear in advance of the prospect of good harvests, and to sell it at more than it is worth, is but an evidence of superior sagacity. To buy your coat in the cheapest market, careless what are the sufferings of the poor tailor, and sell your grain in the dearest, though your neighbour may be starving, is the cardinal principle of this school.

A very slight examination will suffice to convince the reader that, as has been already shown, these frauds and overreachings increase in the ratio of the distance between the consumer and the producer. The food that has travelled far is dear, and worthy to be mixed with beans. The cotton produced in remote lands is dear, and it is profitable to mix it with flour. The shoemaker who supplies the auctions uses poor leather, and employs poor workmen.* The object of protection is that of bringing the consumer of food to the side of its producer, there to eat plenty of good and nourishing food; the consumer of cotton to the side of its producer that he may not need to wear a mixture of wool and paste; and the shoemaker to the side of the farmer and planter, that the latter may be supplied with "custom-work," and not "slop-work." By this he gains doubly. He gives less food, and gets better clothing in return. By so doing, his own physical condition and the moral condition of the shoemaker are both improved.

The whole tendency of the system is to the production of a gambling spirit. In England, it makes railroad kings, ending in railroad bankrupts, like Henry Hudson. If we could trace the effect of the great speculation of which this man was the father, we should find thousands and tens of thousands of husbands and wives, parents and children, utterly beggared to build up the fortunes of the few, and thus increase the inequality of social condition which lies at the root of all evil. If we examine it here, we see it sending tens of thousands to California, eager for gold, there to lose both health and life.† It is sending thousands of boys and girls to our cities—the former

* Take, as an illustration in the system, the fraud in carpets, such as are usually sold at auction. "The head end of the piece is woven firmly for a few yards, when the web is gradually slackened, so that the inside of the piece bears no comparison with the outside. This is done so adroitly that it is impossible for any, but the best judges to tell in what the cheat consists. There is a double evil in this imposture, for the fabric not only grows poorer and thinner as the piece is unrolled, but the figures, containing of course the same number of threads throughout, will not match, their size being increased with the slackness in weaving. This is not only a positive cheat, but it greatly interferes with the honest dealer, whose goods being alike throughout, cannot of course compete in price. It is incredible to what an extent this practice is carried, and it is high time there was some legal remedy."—*Dry Goods Reporter.*

† "This is one of the strangest places in Christendom. I know many men, who were models of piety, morality, and all that sort of thing, when they first arrived here, and

to become shopmen, and the latter prostitutes, while hundreds of thousands are at the same time making their way to the West, there to begin the work of cultivation, while millions upon millions of acres in the old States remain untouched. With every step of our progress in that direction, social inequality tends to increase. The skilful speculator realizes a fortune by the same operation that ruins hundreds around him, and adds to his fortune by buying their property under the hammer of the sheriff. The wealthy manufacturer is unmoved by revulsions in the British market which sweep away his competitors, and, when the storm blows over, he is enabled to double, treble, or quadruple, his already overgrown fortune. The consequence is, that great manufacturing towns spring up in one quarter of the Union, while almost every effort to *localize* manufactures (thus bringing the loom and the anvil really to the side of the plough and the harrow) is followed by ruin. The system tends to make the rich richer and the poor poorer. The coal miner of the present year works for half wages, but the coal speculator obtains double profits, and thus is it ever—the producer is sacrificed to the exchanger. With the growth of the exchanging class, great cities rise up, filled with shops, at which men can cheaply become intoxicated. New York has 4567 places at which liquor is sold, and the *Five-Points* are peopled with the men who make Astor-place riots. Single merchants employ 160 clerks, while thousands of those who are forced into our cities and seek to obtain a living by trade are ruined. Opera singers receive large salaries paid by the contributions of men whose shirts are made by women whose wages scarcely enable them to live.

The whole system of trade, as at present conducted, and as it must continue to be conducted if the colonial system be permitted longer to exist, is one of mere gambling, and of all qualities, that which most distinguishes the gambler is ignorant selfishness. He ruins his friends and wastes his winnings on a running-horse, or on a prostitute. To what extent this has been the characteristic of the men who have figured most largely in the walks of commerce, might be determined by those who are familiar with the concerns of many of the persons described in the following passage, which I take from one of the journals of the day:

"The great merchants of this great mercantile city, who were looked up to with reverence by the mammon-worshipping crowd twenty years ago—where are they? Ask Stephen Whitney and those few who have with him survived the shock of thirty years' changes, and they will tell you, in commercial language, that 93 or 95 per cent. of their contemporaries at that date have since become bankrupt, and that the widows of most of those deceased are either "keeping boarding-houses" or have left friendless orphans to "the tender mercies" of a commercial world.

"Look at the ephemeral creatures of this and last year's accidents, who now figure largely in the great world of New York, whether in the wholesale or retail line—whether in commerce, fashion, theatricals or religion—and ask where and what they or their children are likely to be twenty-years hence. The answer will be such as none of those most deeply in it will be apt to give with precise or probable correctness. 'They shall heap up riches and know not who shall gather them;' 'they shall build houses and know not who shall inhabit them;' 'they shall plant vineyards and shall not eat the fruit of them;" they shall 'call their lands after their own names,' and a generation shall rise up and possess them who shall laugh those names into a contempt from which the oblivion that shall succeed will seem a happy deliverance."—*N. Y. Herald.*

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who are now most desperate gamblers and drunkards."—*Extract from a letter dated San Francisco, July* 30.

"*American Lottery*—Class No. 1—$10,000 in actual prizes, sixty-six numbers, twelve drawn ballots. Whole tickets, $10; half do. $5. This lottery will be drawn at the Public Institute in San Francisco, on the third day of October, '49, at twelve o'clock, M., under the superintendence of the managers."—*Pacific News.*

As a necessary consequence of the system, money becomes more and more an object of consideration in the contraction of the important engagement of matrimony, and marriage settlements begin to appear among us. The newspapers of the day inform us of the recent execution of one for $200,000.

If we look westward, it is the same. Centralization produces depopulation, and that is followed by poverty and crime. London grows upon the system that ruins India and fills it with bands of plunderers. The West and South-west are filled with gamblers, and land-pirates abound. The late war has brought into existence a new species of fraud, in the counterfeiting of land-warrants, and this is but one of the many evils resulting from that measure.

If we look back but a few years, we may see that the period between 1835 and 1843 was remarkable for the existence of crime, and it was that one in which the tendency to dispersion most existed. If we now look to the period between 1843 and 1847, we can see that there was a gradual tendency to the restoration of order and quiet and morality throughout the Union. In the last year, we may see the reverse. It was marked by turnouts, insubordination and violence of various kinds in country and in city. Such is the direct consequence of a diminution in the productiveness of labour. The employer must pay less, and the employed is unwilling to receive less than that to which he has been accustomed.

The tendency of the colonial system is to increase the number of wagons and wagoners, ships and sailors, merchants and traders, the men who necessarily spend much time in hotels and taverns, living by exchanging the products of others. The tendency of protection is to increase the number of producers—of the class that lives at home, surrounded by wives, children, and friends. The one builds up the city at the expense of the country; the other causes both to grow together.

Cities are rivals for trade, and when the farmer desires a new road to market he is opposed, lest it should enable him to go more cheaply to Charleston than Savannah; to New York more readily than to Philadelphia. London is jealous of Liverpool, and Liverpool of London. Discord is everywhere, and the smaller the amount of production, the greater must it necessarily be. Protection seeks to increase production, and thus establish harmony.

It is asserted that protection tends to increase smuggling, and therefore to deteriorate morals. To determine this question, it would be required only to ascertain what description of men transact business at our custom-houses. From 1830 to 1834, the chief part was done by men who had homes occupied by wives and families, for whose sake reputation was dear, but from 1835 to 1842, it passed almost entirely into the hands of men who lived in hotels and boarding-houses, and who had neither wives nor families to maintain. From 1843 to 1847, it went back to the former class. It has now returned almost entirely into the hands of agents—men whose business is trade, and who swear to a false invoice for a commission. The honest man, who desires to perform his duties to his wife and children, to society, to his country, and to his Creator, cannot import foreign merchandise. The system is a premium on immorality and fraud.

The object of protection is the establishment of perfect free trade, by the annexation of men and of nations. Every man brought here increases the domain of free trade, and diminishes the necessity for custom-houses. Every man brought here consumes four, six, ten, or twelve pounds of cotton for one that he could consume at home, and every one is a customer to the farmer for bushels instead of gills. Between the honest and intelligent man who desires to see the establishment of *real* free-trade, the Christian who desires to see an improvement in the standard of morality, the planter who desires an in-

creased market for his cotton, the farmer who desires larger returns to his labour, the landowner who desires to see an increase in the value of his land, and the labourer who desires to sell his labour at the highest price, there is perfect harmony of interest.

CHAPTER TWENTY-SECOND.

HOW PROTECTION AFFECTS INTELLECTUAL CONDITION.

The higher the degree of intellect applied to the work of production, the larger will be the return to labour, and the more rapid will be the accumulation of capital. If protection be "a war upon labour and capital," it must tend to prevent the growth of intellect.

The more men are enabled to combine their efforts, and the greater the tendency to association, the larger is the return to labour, and the more readily can they obtain books and newspapers for themselves, and schools for their children. The object of the monopoly system is that of compelling men to scatter themselves over large surfaces, and into distant colonies, and thus to diminish the power of obtaining books, newspapers and schools. The object of protection is the correction of this error, and to enable men to combine their efforts for mental as well as physical improvement.

The greater the tendency to association, the greater is the facility for the dissemination of new ideas in regard to modes of thought or action, and for obtaining aid in carrying them into practical effect. The object of *the English monopoly system* is that of separating men from each other, and depriving them of this advantage. The object of protection is to enable them to come together, and being so, it would seem to be the real friend to both labourer and capitalist.

If we look throughout the world we shall see intellect increasing as men live more and more in communion with each other, and diminishing as they are compelled to separate. The man who is distant from market spends much of his time in taverns, where he obtains little tending to the improvement of mind or morals. The man who has a market at his door, may obtain books and newspapers, and he is surrounded by skilful farmers, from whom he obtains information. Not being compelled to spend his time on the road, he is enabled to give both time and mind to the improvement of his land, to which he returns the refuse in the form of manure, and thus it is that he himself grows rich.

Of all the pursuits of man, agriculture—the work of production—is the one that most tends to the expansion of intellect. It is the great pursuit of man. There is none "in which so many of the laws of nature must be consulted and understood as in the cultivation of the earth. Every change of the season, every change even of the winds, every fall of rain, must affect some of the manifold operations of the farmer. In the improvement of our various domestic animals, some of the most abstruse principles of physiology must be consulted. Is it to be supposed that men thus called upon to study, or to observe the laws of nature, and labour in conjunction with its powers, require less of the light of the highest science than the merchant or the manufacturer?"* It is not. It is the science that requires the greatest knowledge, *and the one that pays best for it:* and yet England has *driven* man, and wealth, and mind, into the less profitable pursuits of fashioning and exchanging the products of other lands: and has expended thousands of millions on fleets and armies to enable her to drive with foreign nations the poor trade, when her own soil offered her the richer one that tends to produce

* Wadsworth's Address to the New York Agricultural Society.

that increase of wealth and concentration of population which have in all times and in all ages given the self-protective power that requires neither fleets, nor armies, nor tax-gatherers. In her efforts to force this trade, she has driven the people of the United States to extend themselves over vast tracts of inferior land when they might more advantageously have concentrated themselves on rich ones: and she has thus delayed the progress of civilization abroad and at home. She has made it necessary for the people of grain-growing countries to rejoice in the deficiencies of her harvests, as affording them the outlet for surplus food that they could not consume, and that was sometimes abandoned on the field as not worth the cost of harvesting; instead of being enabled to rejoice in the knowledge that others were likely to be fed as abundantly as themselves. Her internal system was unsound, and her wealth gave her power to make that unsoundness a cause of disturbance to the world; and hence she has appeared to be everywhere regarded as a sort of common enemy.

To this unsound system we are indebted for the very unsound ideas that exist in regard to the division of labour. Men are crowded into large towns and cities, to labour in great shops, where the only idea ever acquired is the pointing of a needle, and that is acquired at the cost of health and life. The necessary consequence is the general inferiority of physical, moral, and mental condition, that is observable in all classes of English workmen.

Of all machines, the most costly to produce is Man, and yet the duration of this expensive and beautiful machine is reduced to an average of twenty-five or thirty years, under the vain idea that by so doing pins and needles may be obtained at less cost of labour. The principle is the same that is said to govern the planter of Cuba when he stocks his estate exclusively with males, deeming it cheaper to buy slaves than to raise them. As a necessary consequence, the duration of life is there short, and so is it in the crowded factories of the great "workshop of the world." The idea *is* vain. Pins and needles would be obtained at far less cost of labour were the workshops of Sheffield and of Birmingham scattered throughout the kingdom, thereby enabling the producers of pins to take their places by the side of the producers of food, and enabling all to enjoy the pure air and pure water of the village, instead of being compelled, after breathing the foul atmosphere of the workshop during the day, to retire at night to rest in the filthy cellar of the undrained street. Were the ore of Ireland converted into axes and railroad bars by aid of the coal and the labour of Ireland, the cellars of Manchester and Birmingham would not be filled with starving Irishmen, flying by hundreds of thousands from pestilence and famine, and compelling the labourers of England to fly to the United States, Canada, or Australia.

The English school of political economy treats man as a *mere* machine, placed on the earth for the purpose of producing food, cloth, iron, pins, or needles, and takes no account of him as a being capable of intellectual and moral improvement. It looks for physical power in connection with ignorance and immorality, and the result is disappointment.* The workman of

* The commissioners for inquiring into the state of education in Wales, describe a state of mental condition perfectly in keeping with the following account of their physical condition:—"The houses and cottages of the people are wretchedly bad, and akin to Irish hovels. Brick chimneys are very unusual in these cottages; those which exist are usually in the shape of large coves, the top being of basket-work. In few cottages is there more than one room, which serves for the purpose of living and sleeping." Hence it is that there is so universal a want of chastity, resulting, say the commissioners, "from the revolting habit of herding married and unmarried people of both sexes, often unconnected by relationship, in the same sleeping rooms, and often in adjoining beds, without partition or curtain." [See Westminster Review, No. XCVI.]

this country is infinitely the superior of the workman of Manchester, and the reason is, that he is not treated as a mere machine. The object of what is called free trade is to degrade the one to the level of the other. The object of protection is that of enabling the poor artisan of Manchester or Leeds, Birmingham or Sheffield, to transfer himself to a country in which he will not be so treated, and in which he may have books and newspapers, and his children may be educated.

The colonial system involves an expenditure for ships of war, soldiers, and sailors, greater than would be required for giving to every child in the kingdom an education of the highest order; and those ships and men are supported out of the proceeds of taxes paid by poor mechanics and agricultural labourers, whose children grow up destitute even of the knowledge that there is a God. The object of protection is to do away with the necessity for such ships and men, and to raise the value of labour to such a point as will enable the people of England to provide schools for themselves.

In the colonies, the perpetual exhaustion of the land and its owner has forbidden, as it now forbids, the idea of intellectual improvement. To the West Indies no Englishmen went to remain. The plantations were managed by agents, and the poor blacks, under their agency, died so fast as to render necessary an annual importation merely to keep up the number. In India, where education was from the earliest period an object of interest to the government, and where every well-regulated village had its public school and its schoolmaster, in which information was so well and so cheaply taught as to furnish the idea of the Lancaster system, it has almost disappeared. In the *thana* of Nattore, containing 184,509 inhabitants, there were, a few years since, but 27 schools, with 262 scholars. The teachers were simple-minded and ignorant, with salaries of $2·50 per month, and the scholars were without books. The number who could read and write was 6000. Such was the state of education in one of the best portions of Bengal. In the Bombay presidency, with a population of six and a half millions, there were 25 government schools, with 1315 scholars, and 1680 village schools, with 33,838 scholars. In the Madras presidency, out of 13 millions, there were 355,000 male and 8000 female scholars, and the instruction was of the worst kind.

In Upper Canada, in 1848, the number of children, male and female, under fourteen years of age, was 326,050, of whom but 80,461 attended school.* So far the state of things is better than in other colonies; but when we come to look further, the difference is not very great. The intellect of man is to be quickened by communion with his fellow-man, of which there can be but little where the loom is widely distant from the plough, and men are distant from each other, all engaged in the single pursuit of agriculture. How slow has been the growth of concentration in that province, may be seen from the following facts. Numerous small woollen mills furnish 584,008 yards of flannel and other inferior cloths, working up the produce of perhaps 250,000 sheep. Fulling mills exist, at which about 2,000,000 pounds of woollen cloths of household manufacture are fulled. Further, there are—

1 rope-walk.	11 pail factories.	1 ship-yard.	1 vinegar factory.
1 candle factory.	1 last factory.	1 trip hammer.	5 chair factories.
1 cement mill.	4 oil mills.	2 paper mills, making 1900 reams each.	2 brick-yards.
1 sal-eratus factory.	3 tobacco factories.		1 axe factory, producing 5000 per annum.
8 soap factories.	2 steam-engine factories.	3 potteries.	
3 nail factories.		1 comb factory.	6 plaster mills.†

And these constitute the whole of the manufacturing establishments of

* Appendix to first Report of Board of Registration. † Ibid.

that great district of country, much of it so long settled. There is, consequently, little or no employment for mind, and the consequence is, that all who desire to engage in other pursuits than those of agriculture fly to the South. There are now within the Union, it is said, not less than 200,000 Canadians, and with every day the tendency to emigration increases.* If we look to Nova Scotia and New Brunswick, it is the same. There is there no demand for intellect, and any man possessing it flies southward. Forty years since it was asked, "Who reads an American book?" That question has long since been answered; but it may now be repeated in reference to all the British provinces. Who reads a Canadian, a Nova-Scotian, or a New Brunswick book? Upper Canada has two paper-mills capable of producing about ten reams of paper per day, being, perhaps, a tenth of what is required to supply the newspapers of Cincinnati. Forty years since, the question might have been asked, Who uses an American machine?" and yet the machine shops of Austria and Russia are now directed by our countrymen, and the latest improvements in machinery for the conversion of wool into cloth are of American invention. The British provinces have had the *advantage* of perfect free trade with England, the consequence of which is, that they are almost destitute of paper-mills and printing-offices, and machine shops are unknown, while the Union has been *a prey to the protective system*, that "war upon labour and capital," the consequence of which is, that paper-mills and printing-offices abound to an extent unknown in the world, and almost equal in number and power to those of the whole world,† and machine shops exist almost everywhere. These differences are not due to any difference in the abundance or quality of land, for that of Upper Canada is yet to a great extent unoccupied, and is in quality inferior to none on the continent. They are not due to difference in other natural advantages, for New Brunswick has every advantage possessed by Maine and New Hampshire, and Nova Scotia has coal and iron ore more advantageously situated than any in the Union. They are not due to difference of taxation, for Great Britain has paid almost all the expenses of government. To what, then, can they be attributed, but to the fact that those provinces have been subject to *the monopoly system*, and compelled to waste their own labour while giving their *products* in exchange for the *services* of English men, women, and children, employed in doing for them what they could have better done themselves, and losing four-fifths of their products in the transit between the producer and the consumer? Place the colony within the Union—give it protection—and in a dozen years its paper-mills and its printing-offices will become numerous, and many will then read Canadian books.

In England, a large portion of the people can neither read nor write, and there is scarcely an effort to give them education. The colonial system looks to low wages, necessarily followed by an inability to devote time to intellectual improvement. Protection looks to the high wages that enable the labourer to improve his mind, and educate his children. The English child, transferred to this country, becomes an educated and responsible being. If he remain at home, he remains in brutish ignorance. To increase the

* "I do not exaggerate when I say that there are no less than 200,000 Canadians in the United States; and, unless efficacious means are taken to stop this frightful emigration, before ten years two hundred thousand more of our compatriots will have carried to the American Union their arms, their intelligence, and their hearts."—*Letter of Rev. Arthur Chiniquy.*

† The whole quantity of paper required to supply the newspaper press of Great Britain and Ireland is 170,000 reams; while that required for the supply of *four papers* printed in New York, Philadelphia, and Baltimore, is about 110,000, and the whole number of newspapers is about 2400.

productiveness of labour, education is necessary. Protection tends to the diffusion of education, and the elevation of the condition of the labourer.

At no period of our history has the demand for books and pictures, or the compensation of authors or artists, been less than in the period of 1842–43. At none have they grown so rapidly as from 1844 to 1847. They now tend downward, notwithstanding a demand that is still maintained by the power that yet exists of obtaining merchandise in exchange for certificates of debt. When that shall pass away, we shall see a recurrence of the events of the free trade period.

If we desire to raise the intellectual standard of man throughout the world, our object can be accomplished only by raising the value of man, as a machine, throughout the world. Every man brought here *is* raised, and every man so brought tends to diminish the supposed surplus of men elsewhere. Men come when the reward of labour is high, as they did between 1844 and 1848. They return disappointed when the reward of labour is small, as is now the case. Protection tends to increase the reward of labour, and to improve the intellectual condition of man.

New Telegraphic Dictionary.—A French paper, the *Presse*, gives some account of experiments lately made at the house of M. de Girardin, with a new telegraphic dictionary, the invention of M. Gonnon. Despatches, in French, English, Portuguese, Russian, and Latin, including proper names of men and places, and also figures, were transmitted and translated, says this account, with a rapidity and fidelity alike marvellous, by an officer who knew nothing of any one of the languages used except his own. Dots, commas, accents, and breaks were all in their places. This dictionary of M. Gonnon is applicable alike to electric and to aerial telegraphy, to transmissions by night and by day, to maritime and to military telegraphing.

Gutta Percha Soles.—The Commissioners of the Greenwich Hospital Schools authorized, at the beginning of the year, a trial of the gutta percha soles by the eight hundred boys under their charge, and after a severe test of six months the gallant superintendent, Lieutenant Rouse, now reports that they are decidedly more durable and economical than leather, and from their peculiar power of repelling wet, promote the health of the wearers.—*Nautical Standard.*

Sale of Shorthorns.—At Mr. Colvin's sale of shorthorns at Monkham's Hall near Waltham Abbey, Essex, on Thursday last, sixty-seven head, comprising bulls, cows, and calves, fetched the large sum of £2033 17*s.*, averaging £30 7*s.* ($150) each. Mr. Henry Strafford, the editor of the "Herd Book," was the auctioneer.

In his late address at Boston, Mr. Skinner defines commerce, in its true sense, to be merely the exchange of one sort of produce or service for another sort of produce or service, and adds—that commerce, in the light in which it should be regarded by legislators, consists in about the proportions of—

"Within families, 50 per cent.; in neighbourhoods, 25; beyond the neighbourhood, but within the nation, 20; with foreign nations, 5: total 100."

SIGHTS SEEN AND OBSERVATIONS MADE ON A LATE VISIT "DOWN EAST."

BY THE EDITOR OF THE PLOUGH, THE LOOM, AND THE ANVIL.

HAVING been for some time away from our post under special call from the "MASSACHUSETTS CHARITABLE MECHANICS' ASSOCIATION," to deliver the address at their late exhibition of Domestic Manufactures; if not now expected, it may not be deemed amiss to give some account of what was seen and noted on this our most recent visit, to a people, the more worthy of contemplation in their institutions and habits for their making at this day, and for some years past (especially the people of Rhode Island and Massachusetts), unexampled progress in everything that can contribute to give character, elevation, and strength to the physical and moral position of commonwealths.

If, as Pope said,

"The proper study of mankind is man,"

so may it be said of man, as of the tree, that he is to be best judged by *his fruits!* Yes, men and States, which are made up of men, are to be judged by the progress they have made in the arts of civilization, and in all else that constitutes the crowning glory of our species, over all other classes of animated beings, by the use they have made of those faculties that have empowered man to execute with the utmost accuracy, the tasks, apparently beyond his reach, assigned to him by the poet when commanded—

"Go, wondrous creature! mount where science guides,
Weigh air, measure earth, and calculate the tides."

Tested by this standard, how poor are the prospects for man under all other governments and in all other countries, compared with ours, in which *man* is at the same time equalized and *elevated?* And then again, restricting our contemplation to our own country, as to the development of their natural resources and advantages, how striking is the difference between some States and "other some!" And here, again, let us repeat the inquiry, Can any phenomena be more worthy of investigation by the philosopher or the philanthropist than the causes which produce these differences?—causes under the influence of which some States are seen to rest like a good ship at sea, water-logged or becalmed, while others, standing on the same course, in the same latitudes, are shooting ahead with uniform and almost immeasurable velocity!

Firmly impressed with a belief that this wonderful difference in the condition of different States results from influences that bear in the first place and most especially upon their *agricultural development*, is it not imperative on the conductor of a journal devoted as this is, to that greatest of all interests, to endeavour to understand and to expose the subject in its true light! That duty we have endeavoured in part to perform, in the ADDRESS already referred to, and which, if not in this, will be published in some early subsequent number; the purpose in hand now being merely to give a *coup d'œil* sketch of some of the sights and incidents that fell under a hasty notice, during an agreeable journey of a couple of weeks "down east."

But first let us aver, in conscious sincerity, that as to the only other quarter of the Union—*the South*—with which we can yet claim to have much acquaintance, founded on personal intercourse, we yield to no living man in appreciation of their natural advantages and in admiration of their brilliant intellectual faculties and their exemplification of the higher qualities of our nature; nor have we failed to proclaim these sentiments publicly, in very large assemblies of northern friends, women and men, when compelled to respond inadequately to

notices too flattering, of our own humble efforts to promote the industrial interests of the whole country. But this very admiration of southern men and southern resources—men with whom we are identified by birth and feeling, and among whom we should never doubt of finding a friend in every farmer's house; all this makes us but the more anxious to look candidly and truly into their condition and prospects, and so to discover how and why it is that, with their own bright skies and bright abilities, with their glorious climate and unparalleled natural resources, they are lagging behind their sister States in the great race of popular growth and advancement in arts, manufactures, commerce and education? Yes, we venture to aver, that no fruiterer ever looked with more sincere solicitude for the source of blight and sterility in a favourite tree, than have we to see if we could discover how it happens that our dear old mother Maryland, and Virginia and the Carolinas, should fail in this noble contest for the development of their resources and the successful application of the faculties of their sons, to the *various* industries for which they possess the elements in such redundance! Can any man, claiming to be a true born son of these States, be indifferent to the question—How is it that while they, through a period of half a century after the Revolution, with all their "peculiar institutions" in full force, continued to leave the New England States further and further in their wake, should, as the census proclaims, after *and coeval* with a certain epoch in our commercial policy, established by the voice of the South, see the gap between them and their Eastern sisters (until then widening) begin to be closed, until now, we find Massachusetts adding 300,000 to her population in the last ten years, and coming out with 1,000,000 of people!—passing unceremoniously by her old sister North Carolina; fast coming up with the "mother of States," and threatening soon to show her heels to that region of our country, the most favoured of God in all the natural power and capabilities in which a high-minded people can desire to excel, and of which they should promptly and proudly avail themselves? Can, let us repeat, any true born son of these States be indifferent to such a problem? or will any but the most prejudiced and narrow-minded refuse to hear the views of one who, with all his local attachments in their favour, professes to be, even on that account, the more desirous to judge impartially and to speak truly? If such there be, then all we have to say is—that it is not for them that we give our nights and days, and all our poor abilities to these investigations—but only, after all, as they are directly or remotely *connected with the landed interest.* Such men, so blinded by prejudice, and so deficient in liberality, must continue, as some of them are doing, to *withdraw their support from the Plough, the Loom, and the Anvil;* but though depending on it for a livelihood, and compelled to pay away on its publication the equivalent of 10,000 bushels of Ohio corn (to be made with these three fingers) before we have enough left for an ash cake, we will *continue to proclaim what we believe to be the truth,* nor "flatter Neptune for his trident." "Do justice though the heavens fall," is our motto, in our editorial position; and so long as we presume to exercise that high office (when its functions are properly appreciated), we must continue to endeavour to reveal the real source of agricultural stagnation as well as of agricultural improvement. But on this subject, the paramount object of our solicitude and our duty, it is not our design, as we have said, to speak in this mere running sketch of what we saw in New England. We did so, incidentally, in the address before the manufacturers and mechanics of Massachusetts, and to that we again refer, commending it to the kindly attention of our agricultural readers, for the reason that, as there expressed, we believe that the Plough may truly say of the Loom and the Ship—these are "bone of my bones, and flesh of my flesh," and that, in a word, all the great branches of our national industry are so blended, that no

policy or influence can impair one without disturbing the healthful action of the others.

To describe, however, in one article all that we saw, of all the exhibitions of manufacturing, agricultural, and horticultural industry and ingenuity, would lead us into details and disquisitions as much beyond the patience of the reader as it would excel the space at our command, so we must promise it in "broken doses," as we can prepare and the patient receive them, and first in order of time and locality came

THE NEW YORK STATE FAIR.

The reader will probably be best content, and most implicitly rely on the Society's own statement, in a journal of their own, kept and published for that purpose, and for other objects; for, although, according to an old vulgar saying, it would be "a dirty bird that fouls its own nest," the State doubtless expects the most exact and impartial account of the results of the application of its own funds, from those to whom it intrusts their expenditure. Here then is that account; and if, as we have been told every year, for many years successively, their exhibitions attest improvements in all departments, "far exceeding," as they say, "the expectations of the most sanguine," the wonder arises, not that "so much," as they further tell us, "remains to be done"— for

"Man never *is*, but always *to be* blessed"—

but does it not warrant the hope that such constant general and decided improvement will very soon now bring about the time, when the average of the great staple of the State, wheat, instead of falling below fifteen, as in 1845, will go up to double that number of bushels per acre? For ourselves, however, we may be permitted to express our humble apprehension, that such a consummation will ever be far distant, with a people who widely proclaim and publish, and believe in and act upon the belief, that "our farmers must *surrender the idea of a domestic market* to furnish the demand and measure of the value of their productions, and must prepare themselves to meet the competition of the commercial world, in the markets of the commercial world, in the sale of the fruits of their labour. The marts of commerce must be their market, and the demand and supply which *meet in those marts* must govern their prices."* Now, on the contrary, we hold the reverse of all this to be true, and that the agriculture of no country ever did, or ever can advance generally to a high state of improvement which does not in its policy look to the *consumption on the land of the products of the land;* but—we shall see.

If the immense crowd in attendance at the late fair, was attracted not so much by common curiosity, as by enlightened solicitude for instructive observation and agricultural improvement; and if that improvement may be measured by the *number of spectators*, then may we infer that the result was worthy of the Empire State, its patronage and its resources. To us, on a cursory view, the show appeared to be spread over a space large, far beyond the requirements of necessity or convenience; and yet, to be so huddled and compressed at some particular points of exhibition, as to be not easily accessible for deliberate examination. These, however, are small faults, if real, and may be deemed unworthy of notice, in contemplation of the grand *tout ensemble*, of which here is an official statement from the journal of the Society itself.

* Governor Wright's Address.

ANNUAL FAIR.

"The annual exhibition and fair of the society which has just closed has been one of the most successful ones ever held. The increased interest which is manifested by the farmers of our own and neighbouring States is in the highest degree encouraging. The improvement which has taken place in cattle, horses, sheep and swine, as well as in implements useful and necessary to the farmer, since the first public exhibition of the society was held in 1841, far exceeds the expectations of those most sanguine. The improvements, also, in the farm itself and its products, have been equally apparent, and the society may well congratulate itself upon the results of its efforts to improve the agriculture of the State. Much remains to be done, and, taking courage from the success which has attended the efforts already put forth, the society will, doubtless, with renewed energy prosecute the great work committed to its charge.

"The number of persons in attendance has been probably larger than at any previous show of the society—the lowest estimate exceeding 90,000 persons. The receipts have been much greater than any previous year, amounting to $10,503,19, exceeding the receipts of last year $2,321,06. We have not space to speak of the particular characteristics of this Fair. The number of entries in the stock departments were—cattle 475; horses 286; sheep 567; swine 32; poultry 107; miscellaneous 19. In the mechanical and domestic department, the entries were very large, far exceeding previous years.

"We give the awards of the judges, and the list is as complete as it could be made. The reports, many of which are of great interest, will be published in the Transactions of the Society to be submitted to the legislature at its next session."

In the brief and well-expressed address of the President of the State Society, E. P. PRENTICE, Esq., we are glad to see the good taste marked by the omission of the mawkish expletive, *His Excellency*, too often applied in referring to "the President of the United States," the latter being the only correct, and at the same time simplest and highest title known in our country, where, by the by, titles as high as we dare yet venture upon are as eagerly sought, as lavishly bestowed, and as highly prized, as in any country under the sun, maugre our boasted republican simplicity, and love of the largest liberty, almost bordering on an avowed contempt for the laws of *meum and tuum*. Meeting at New York a grandson of GENERAL LAFAYETTE, we persuaded him to accompany us to this great exhibition of agricultural industry, and deem it not out of place to add, that assured of meeting there its wonted hospitality, we took him at once to the Manor House to breakfast, where we were received by the proprietor with an unaffected ease and affability inherited of his worthy sire, the late estimable Patroon. In a ramble before breakfast, through his extensive graperies and orchards of peaches, and nectarines under glass, and over his enchanting grounds, beautified by shrubbery of every variety, and flowers of every colour and perfume, this worthy descendant of Lafayette must have been gratified on encountering a fine marble bust of Washington on an elevated pedestal on one hand, and on the other, opposite, one of his venerated grandsire, who "held no second place in the heart of Washington."

To our young friend doubtless as to us, the incident was as gratifying as it was to him probably unlooked for. An invitation to return to dinner was so cordially tendered, and so *fair*ly and affably seconded, as to be irresistible, nor were the pleasures of the table any the less relished for the pre-

sence of Judge Wayne and other sprightly and charming personages around it. Generally we should deem it inadmissible to refer publicly to such private civilities, however worthy to be otherwise remembered; but we are speaking of incidents that made part of a general holiday excursion; and after being confined with two thousand passengers all the previous night, on board a North River steamboat, one may be allowed to analyze and dwell upon incidents so refreshing, as the traveler notes, and forgets not, the *oases* that he unexpectedly comes upon in the desert.

Otherwise the most agreeable incident was an encounter on the ground, far away from their homes, too, with *Col. Wilder*, President of the Norfolk County Massachusetts Agricultural Society, with the Apple King, "*French*, only in *name*, being a hearty and thriving sprout of the true Saxon stock, with Mr. WELD, and other welcome friends from the land of steady habits." From the first-named, who so well knows how to practice the proprieties as well as the hospitalities of his station as President of a company, a knowledge not quite universal, we both received formal and kind invitations to attend the fair, to come off at *Dedham*, Massachusetts, on the 25th of the same month, and of which we shall have occasion to speak more particularly hereafter.

In the meantime came round

THE EXHIBITION OF DOMESTIC MANUFACTURES BY THE MASSACHUSETTS CHARITABLE MECHANICS' ASSOCIATION,

to which also Mr. Lafayette had been invited.

Of this magnificent Exhibition of the progress of American Manufactures and mechanical ingenuity and perfection of workmanship, it would be out of place to speak, in much detail, in this journal except of the *Agricultural Department* of it; and for an account of that, we shall abide by the report of the appropriate committee when it reaches us. We can only say now, that if what we saw were not *picked samples*—if the manufacturers of them have plenty more of the "same sort," then did that department illustrate the great truth we insist upon most: that every art and product of labour is multiplied and improved, when circumstances allow men to follow the laws of nature, concentrating instead of scattering population, and enabling men to combine their talents and exertions for common benefit by placing the consumer close to the producer; instead of "surrendering the idea of a domestic market, and preparing to meet the competition of the commercial world in the markets of the world." The catalogue before us, which we shall be happy to show to any one wishing to have a better though still but imperfect idea of this wonderful display, enumerates near two thousand separate entries, many of these containing a great variety of distinct objects. But to have anything like an adequate conception of this biennial fair, one must have viewed leisurely, and in detail again and again, a show, that, as we have elsewhere said, was calculated at once to confound by its variety and to charm by its general excellence. Though there was, throughout the two weeks of the exhibition, a constant stream of visitors passing through the spacious halls, everything was so well ordered and distinctly labelled, that no confusion occurred; and even the press, worked under the supervision of Messrs. Dawbrell and Moore, chronicled on the spot the sparkling incidents of each day, from the brilliant pen of Perley Poore. But to the most cursory observer, it was obvious after all how much of the gratifying results was due to the careful and well-ordered arrangements of the Executive Committee, Messrs. Hooper, Osmyn, and Lincoln, and their zealous and efficient associates.

As to their *levée*, held in the spacious saloons of the Revere House, after

the delivery of the address at the Lowell Institute, what shall we say of it? Let the reader imagine some three hundred or four hundred gentlemen, members of the Association, after congratulating each other and receiving the congratulations of their invited guests, on the success of their admirable Institution, being presently conducted by the President to view and participate in such a display of good things; of fruits, flowers, and refreshments for the "inward man," as to leave it difficult to be said what sense was the most captivated. Truly, and in few words, he who would have an adequate idea of choice fruits and floral beauties in all their perfection and gorgeous variety of flavour, colour, and perfume, must go at last to the desperate soil and cold climate of New England, where the magic presence of prosperous consumers, insuring a *remunerating market on the spot*, gives wonderful speed and fruitfulness to the plough, with the highest skill in the use of the budding-knife and the pruning-hook, and all the arts of terraculture. Yes, after all, it is population (as Mr. Carey says in his profound work) that makes the food come from the ground.

Instead of idly whiling away his midsummers at watering-places, or humming forever the senseless tune of "free trade," let the young southern landholder, as we have often advised, on coming to his estate, make a visit "down east;" not to learn there any better than he can learn at home, how to sow and how to reap; how to breed and how to fatten; but to see how *precious is time*, and how good roads and strong and perfect animals and machines, and every other contrivance, are made to contribute to *the efficient use of time*, wherever employments are infinitely diversified, as in New England; the manufacturer being there placed, as recommended by Mr. Jefferson, by the side of the agriculturist.

As to the beautiful entertainment to which we are referring, it would be unfair not to award the credit, on this occasion, of his well-known taste and liberality, to Mr. Stephens the proprietor, and to his gentlemanly associates of the Revere House, and to Mr. Hooper the praise of eminent propriety and success in his presidency over all.

Viewing all such exhibitions, however, in the light most worthy of regard, that is, as at once testing and encouraging the *progress of the arts at the time;* and as the means, in fact, of noting historically the *epochs* that signalize that progress; regarding such exhibitions in these lights, we cannot but think that the good plan of the Massachusetts Association, in holding their exhibitions *biennially*, would be still further improved by restricting them to once in three or even four or five years.

These annual exhibitions appear to us to run, as it were, too much into each other, confounding the public judgments, as they leave no distinct traces by which to compare the fruits of one with the preceding, thus disabling us from judging with anything like precision, of the successive triumphs of philosophical investigation and scientific discovery. In a word, there may be "too much of a good thing," to say nothing of the dog and the pudding, and though these too frequent contributions may "put money in your purse," we know it to be the impression of many well-judging men, that by too frequent repetition they lose in interest and usefulness. A single year may serve to bring out some wonderful discovery in a particular line of art or industry, and for proclamation of that, we may generally rely on the press; but for great national exhibitions of the advancement of all the arts and sciences, by an actual display of their fruits, may not their value be much impaired by their frequency? We only ask for information. How would it do to hold alternate exhibitions by the Institutes at Baltimore, Philadelphia, New York, and Boston?

FARMS AND VILLAGES AROUND BOSTON.

We might here speak of agreeable and instructive excursions to farms and villages in the neighbourhood of Boston; of a pleasant ride out with Mr. King, to an old friend, Mr. Stone's farm, six miles distant, and "strike up," as Jack Downing would say, the southern reader, with an account of the *great variety* of things it *daily* produces for the Boston market; making in the aggregate a sum that would surprise him, $2000 for fruit being one of the many items. But we must take some other occasion to speak of these things. From an eminence on Mr. Stone's farm, we overlooked the valley of West Cambridge, which he considered the most productive area of equal extent he had ever seen, in the course of, as we happen to know, extensive travel in our country; for, some years since, we had the pleasure to meet and make his acquaintance on the Ohio and in New Orleans. Ten thousand barrels of apples were specified as one item of the products of the very limited space in view of us.

One of the wonders of New England, is the number of places you may visit in a given short space of time, by means of her railroads, on which you may at almost any hour of the day issue out from Boston, and traverse every part of the country, as the spider does his web, from centre to circumference, and that at a rate of twenty-five miles an hour, and at a very moderate fare; not slowly, as on the Baltimore and Ohio road, thirty-nine miles to Washington, in two hours and thirty minutes, fare $1 80; or to Cumberland in much better time, 179 miles, but at the tune of $7; while the fare from Boston to New York, 236 miles, by way of Springfield, is but $5. For ourselves, it is due in gratitude here to make acknowledgment that we are welcomed to go free on all other roads but the B. & O. Even from Boston to Little Rock in Arkansas, have all proprietors of public conveyances had the kindness to say, "*Ride freely, and welcome.* Well we know you established at your own cost the first work devoted as well by its express title, to 'INTERNAL IMPROVEMENTS,' as to the plough, long before almost any of our great works were thought of; and as we believe your habit is, as you go along, to see what you can note, and *'prent'* it too for public good, we are pleased to have you go on your way observing."

We feel that we owe this general and grateful acknowledgment in passing, to all steamboat and railroad companies, as far as we have travelled within the bounds mentioned, and most assuredly while the Lord spares us, will *endeavour to justify it.* By the by, it was but a few days since that we were amused in reading some of our own earnest entreaties and arguments to the public, to prevail with it thirty years ago *to think of the value and the practicability* of many of our now great internal improvements, and among them, the completion of the Chesapeake and Ohio and the Chesapeake and Delaware Canal, and of the construction of the Delaware and Hudson Canal; but let that pass. To return to our subject.

We might here speak of agreeable excursions to New Bedford, the whale-shipping town, where men, as we saw, move large houses as we move chicken coops: to the beautiful and thriving town of Taunton, Massachusetts, the seat of the great copper factory, of the enterprising and intelligent brothers, the Messrs. Croppers. We might perhaps well recompense the reader for the space it would occupy, could we do justice to the magical inventions of Mr. BIGELOW, in carpet and counterpane manufacturing machinery, as exhibited at Lowell and Clinton; inventions approaching in the view of the uninitiated so near to witchcraft, that one may believe that in olden times, not a thousand miles from where they are at work, the projector would have been put to the

stake. Indeed, we are not quite sure that there are not some remaining, who, were he in their neighbourhood, would have recourse to an old horse-shoe as a talisman. But of all these things we must be content, for the present at least, with the grateful remembrance of the attentions of Mr. Bigelow, Mr. Fairfield, and others, to whom we were indebted for a view of them, avowing only the hope of being able to speak of them all more in detail, and particularly in explanation of the value of such establishments to the *agriculture of a country*. But before we turn to the next Fair, be it mentioned that at Mr. Bigelow's factories we saw a *single room*, arranged for eight hundred women to work at the looms, all in view of each other, and all perfectly well lighted and ventilated.

THE PRINCIPLES OF VENTILATION.

It may be well here to admonish the reader that in all horticultural and farm buildings, there is one great principle on which every system of ventilation depends, and which had been provided for here in a manner more emphatic and perfect than we had ever seen. We cannot help thinking it might be applied to the more thorough ventilation of our public ships.

In ventilating buildings, says a recent writer on the subject, two things should be borne in mind; and as upon the proper attention to these depends the success of the plan, particular attention should he paid to see them carried into effect. These are the supply of the interior with fresh air, and the withdrawing it when vitiated. And here we would request attention to the fact, the truth of which the evidence of all experience goes to prove, that no foul air can by any possibility be extracted from the interior of any building, however well arranged the means to insure its exit may be, unless *an ample supply of pure air is admitted*. It is the force of air entering that causes the vitiated air to be expelled. It is necessarily impossible to have ventilation without a movement of air.

Our readers will do well to remember this. How often do we find horticultural and agricultural buildings, which are said to be ventilated, provided either with one opening somewhere near the top, through which the foul air is expected to pass, while the lower part is kept carefully closed, or with an opening near the bottom, made for the entry of fresh air, whilst no means are provided for getting out the foul.

There came up through the floor of this great factory at several points powerful currents of fresh air, keeping all pure and wholesome.

THE MIDDLESEX FAIR, AT CONCORD.

The politeness of our old and esteemed friend, Mr. Buckingham, of Cambridge, had tempted us to visit (though it could be but for an hour) the agricultural meeting at *Concord in Middlesex*. From the wealth of the county, and the spirit of all the surrounding country, the very air being redolent of the breath of improved animals, and the perfume of fruits and flowers, we had expected——more than we saw! Doubtless it was our misfortune in not having time to examine leisurely, what is to be presumed was somewhere on the ground. We were forced to hurry away, with unfeigned regret that it was not in our power to partake of the farmer's dinner, to which we were so kindly and cordially invited by the venerable President, Mr. Buckingham. Another year may give us a better chance to see and to taste the good things of Middlesex. *So mote it be.*

The next in order in the neighbourhood of Boston came

THE NORFOLK COUNTY AGRICULTURAL SOCIETY'S FAIR AT DEDHAM.

Disappointed last year in witnessing the *Maiden Fair* of this new society, in the old county of Norfolk, we determined to wait now for that and for the one at Salem.

The President having assigned to us the pleasing duty of accompanying our fellow-guest at the Revere House, Mr. G. P. R. JAMES, to the ground, for which he (Col. Wilder) had made the requisite *vehicular provision* (for these Yankees know how to "*do all things up about right*"), we arrived at the beautiful town of Dedham in ample time to be in the first place cordially received and most affably entertained at the hospitable residence of John Gardner (formerly the mansion of Fisher Ames), by himself and lady; and afterwards to take a deliberate survey of the ploughing match, and of such an exhibition of swine, of poultry, of fruits and flowers, and of the handiwork of the ladies, wives and daughters of the farmers of Norfolk, then and there generally present, as it had never been our lot to witness before.

We do not know how it is, but Col. WILDER, the President, must have not only a tact of his own, but the co-operation of associates, such as few men are blessed with, to have a great industrial exhibition like this, only the second of the society, *spring at once into such excellence*, like Minerva from the head of Jove—beautiful and perfect in all her parts and proportions, and armed at every point. Reader, only think of pen after pen of hogs, more perfect, if possible, in shape, than engravings we have been accustomed to regard as pictorial exaggerations of swinish excellence; of coops of poultry of every colour, shape, and variety, from all parts of the world; as many as would extend along one side of Washington Square in Philadelphia. And such a display of fruits, and flowers, as would take a WALKER to classify and a HOVEY to describe. And then the needlework and embroidery of the ladies, so various and so exquisite as that justice could only be done to it by the fine taste and fingers that conceived and executed such designs. And then again imagine all these vegetables and fruits and flowers, and specimens of housewifely industry and taste, and the thousand who enjoyed the view of them, being conveniently displayed and accommodated under a *single tent*, one large enough, as it was said, for ten thousand men to stand under at the same time!

The weather was magnificent. Heaven itself seemed to smile in reward of the industry that could produce such an exhibition; and the smiles of heaven seemed as reflected by the smiles of the farmer's wives and daughters, who honoured the show with their presence, and made the best part of it. To raise up armed men, Cadmus sowed, as we are told, the teeth of a serpent. How Col. Wilder brings around him so many of the fairer sex, more resistless than men in arms, wherever he presides, as the song says, "I should very much like to know."

At a given hour, a procession was formed on the ground, led by the President conducting the orator of the day, Mr. Adams (himself a munificent patron of the Society), and the invited guests, who here were never lost sight of, to the meeting-house, which was crowded in every part, to listen to a patriotic and eloquent address, in which the orator did ample justice to the theme.

The religious exercises being over, which always in New England make a part of the ceremonies on such occasions, enlivened here as everywhere else in New England, as we must think *mal*-appropriately, with the sound of drum and fife, so necessary to make everything go down in this republican

country; the society and its orator and guests thereupon repaired to the dining apartment, for which one-half of the tent aforesaid had been set apart; and here what a scene awaited us! At elevated seats across one end of the tables, the President, Col. WILDER, took his stand, flanked by the orator of the day and the clergy and the invited guests.

Next to himself on one side was Mr. James; and all overlooking as they came in leisurely and took their seats with unbroken order and decorum, *twelve hundred ladies and gentlemen* to feast on the ample stores provided for such an entertainment as is rarely to be seen under any circumstances, either in *physique* or *personnel*. We are not here pretending to give an account of what was said, so much as of what was done, and of that only *currente calamo*, and in a general way. But one could not fail to be struck with the remarkable taste and singular propriety and decorum with which all was conducted. Where else would it have happened, that not a knife was moved nor a spoon touched, nor a word spoken, until 1200 ladies and gentlemen, all comfortably seated, waited for a blessing to be asked on what they were about to enjoy? Yet so it was here. But though nothing was said, it was very clear to the most transient observer that the ladies were thinking, and with their bright eyes inquiring, as much for a *certain author*, whose intellectual fruits had afforded them so much enjoyment, as for the fruits before them. So expressive was their countenance, of curiosity to see *him*, that one could almost hear them think—*which is* Mr. James? Ah! there he is, next on the right of the President, that youngish-looking man, with a *bon-hommie* countenance, the veritable father of such a numerous family, with Agincourt and Attila; the Desultory Man, and the False Heir, and the Black Prince, and the Great Commanders, and the Lord knows how many more sons, *besides the live one that's with him!* Do we then, thought they very plainly, behold the very identical man who has beguiled for us so many hours, with fictions, which with all their variety and fascination, contain *no thread of blue?* Yes, we could read these thoughts in their expressive eyes so plainly, that we were almost tempted to lay our left hand upon his shoulder and say—yes, ladies! *this* is the very MR. JAMES, on whom your husbands might clap a writ "*ad quod damnum*" for loss of services of wives and daughters, spent in following him over mountain, bog and sea and land in pursuit of adventures at once fictitious and delightful, filled with "thoughts that breathe and words that burn," but such as would not, to use the eloquent expression of a gentleman at the time, stain the purest mind of a mother or a child.

When all were seated, Col. WILDER, in his effective and appropriate way, made some preliminary remarks, and a blessing being eloquently invoked, the game of knife and fork commenced in good earnest; nor was there any want of material for playing it.

The official account of what transpired throughout a day what *was a day* for the friends of agriculture, and the housewifely and other kindred arts, will tell the story of the toasts and speeches—and the honour of being among the invited guests may impose the obligation, as it would be a pleasure, to publish it all if we could find room. But, as the members of Congress say, we "rise for a personal explanation!"

First, however, we should say that Mr. James being justly complimented in a sentiment from the President, in behalf of the Society, responded in feeling and eloquent terms, which, when we see it, shall be copied, if only to convince the readers of this journal that the father of "Arabella Stewart" can tell a heifer from a handsaw, and has an eye and a heart for carrots and cattle as well as for "Chivalry and the Crusades."

Apropos!—here is a sketch in the Boston Journal from which we have now space to extract only what follows. After the one general toast,

Mr. Wilder then said: "It affords me great pleasure to announce to you that we have present with us on this occasion as a guest, a gentleman from our fatherland—one who, in the various fields of literature and science, has adorned the rich fruits of knowledge with the beautiful flowers of romance. I introduce to you G. P. R. James, Esq., the accomplished historian, the brilliant novelist, and a distinguished farmer, and I propose as a sentiment—

England and the United States—

Bound together by the ties of a common origin, brought nearer by the wonderful achievements of science, held fast by the golden links of commerce, a still closer connection is maintained through the cords of literature, which, touched by the genius of one country, and vibrating across the ocean, awaken responses in millions of hearts in the other.

Mr. James's response to the compliment from the chair.

The sentiment was received with enthusiastic cheers, which having subsided Mr. James rose to respond. He said he had been introduced as one from the fatherland. He was proud that it was so, and he would say there was no eye in England that would not be proud to own such children as he now saw about him. It was the most magnificent sight he had ever beheld. He came to see the cattle; but he had been shown something more. Such an array of beauty, of oratory, upon the noblest subject! His thanks were due to the Society ten thousand times for the invitation to be present, and also for not telling him of all the entertainment to which he was invited. He had been called a historian. It was true he had read some history, and written some history, and traced upon written page the bloody course of war. But in triumphs such as agriculture accomplishes, we have a nobler kind of warfare, a warfare against all which impedes the march of civilization! The greatest conqueror that ever lived does not deserve so high a crown as the citizen who devotes his powers and talents to the cultivation of the soil.

Between father and child there will be little lifts. The child will sigh to throw off the authority of the parent—especially if the parent be inclined to exercise that authority in a rigid manner. The world looks on the strife with pleasure, and the parent himself at length rejoices in the prosperity of the child, which it would not have attained had it remained under its parent's hand. England is as proud of the progress of her daughter as though her own hands had accomplished it. She feels that it is her blood which has accomplished it. It was the Anglo-Saxon blood which had produced such fruits as he saw around him to-day.

Coming among us from the mother country, he had expected to see much to interest him. But he was greatly disappointed; his imagination had failed altogether. The people of his native land were awfully ignorant of the progress of arts, sciences, and in general and beautiful civilization which the American people have made. Alluding to Agriculture, Mr. James said in many branches of this art you rival us. At the State Fair at Albany, he saw cattle which would compare well with cattle in any part of England; he had seen some beautiful beasts at Dedham, and what he had seen convinced him that the Norfolk County Society was running close upon the heels of any Agricultural Society in the world. With their accustomed New England energy he was confident they would soon catch their rivals. He concluded with the expression of an ardent wish that there might be no strife between the people of the two countries, but that of strife to excel in those things which most contribute to the welfare and happiness of the people at large.

Mr. Wilder then said: It gives me pleasure to introduce to this assembly the editor of the first agricultural paper ever published in the United States, the "American Farmer"—thirty years ago—more recently of the "Farmers'

Library," and now of "the Plough, the Loom, and the Anvil." I propose as a sentiment—

JOHN STEWART SKINNER—the veteran editor of the Plough, the Loom and the Anvil. A pioneer and champion in the cause of Agriculture. His works are an honour to him while living, and shall be monuments to his praise when he is gone. Long may it be before we shall be called to write his epitaph.

In reply to which, Mr. Skinner said, and what he did not say he thought, to wit, that on arriving at a hotel recently and being presented with the register for his name and whereabouts, at some loss to know his real locality, if he had any, and claiming for himself something of the ubiquitarian character of his labours, he had signed J. S. S.—*U. S. A. L.*, United States At Large, for he had been so poked about, and his local attachments had been made so subservient to the desire of benefiting one great interest pervading the whole country—that he really hardly knew where to hail from—but that now, in such a presence, if called upon to say where he *would like* to dwell, he should say S. M. C. N., State of Massachusetts, County of Norfolk, appealing to Mr. James on his left, and to all other gentlemen of gallantry, to say whether a man with such *Fair* at the table might not go further and fare worse?

Mr. S. then turned and appealed to COL. WILDER, as being himself a two-fold president—President of the Senate of Massachusetts and of that society, and moreover at the head of a committee to say what science could do, and should be made to do for agriculture—to say, how it happened, what peculiarity there was in its soil, that this old county of Norfolk, like the red clay land in Virginia, spoken of by the celebrated Randolph of Roanoke, should be so fertile of Presidents, not only of Presidents of the United States, having given birth to the sire and grandsire of the orator of the day, but that it should have produced, as he believed, *all the Presidents of the old agricultural society of Massachusetts* for so many years? Surely, there must be in its soil some fertile ingredients, in its climate some *buenos ayres*, to give it claim to respect and veneration from all the friends of the *Plough*, and if it would not be thought that he would be "always harping on my daughter," he would add, of "the Loom and the Anvil!"

There were indeed, in his mind, old and grateful associations with Norfolk, and with the town and the name of QUINCY, of which many there might not be aware, for these associations had been planted, and had taken root, before many there present, and especially any of the *ladies*, were born. He had made a visit to his old and valued friend, GORHAM PARSONS—"long time ago," and under the guidance of a man of extensive research and acute observation in agriculture and other things, Mr. POMEROY, he had made a most agreeable visit to the venerable JOSIAH QUINCY, who had presented him to the elder Mr. Adams, else he might not have had it in his power to say, to his children and grand-children, that he had actually taken by the hand a venerable patriot, who, to so many other titles to our reverence, added that of having *nominated Washington as Commander in Chief of the American Armies!* The thought has occurred to every one—how great are the results that sometimes spring from apparently trivial incidents; but who dare calculate the glorious consequences to liberty and to mankind, from placing our destinies under such a guidance in such a crisis? Mr. S. described gratefully his remembrance of the warm, unceremonious and cordial manner in which he had been received by Mr. Quincy, who at once took him by the arm and marched him off to his barn-yard, and there formally introduced him to the famous "*oaks cow*," a notable character in her day and generation, for you must know, ladies and gentlemen, said Mr. S., the patriarch whom I had anticipated the pleasure of meeting to-day, kept a *cow-boarding house* at

that time, or perhaps, said he, in more polite parlance, I should say "*Vaccine Institution*," where he boarded their ladyships for $40 a year, washing and lodging included (much laughter). Among other obligations conferred on the most useful pursuits, Mr. Quincy had written on the very interesting subject of *soiling cattle* one of the most valuable contributions at this day to be found in the annals of agriculture in any country, and which he, Mr. S., had published nearly thirty years ago. Mr. S. testified, in most emphatic terms, to the great and surpassing excellence of the exhibition in the various departments already adverted to, but with none was he so much captivated, no feature in it did he consider so auspicious of every good result, as that which distinguished it from all others he had ever seen, to wit: the *lady feature!* the presence of the farmers' wives and daughters at that table, to charm by their smiles, and to animate by their approval, their husbands and their brothers to continued exertions to excel in all that can contribute to the comforts of domestic life and the rational pleasures of social existence. What more beautiful proof could any one desire, than such as is here present, to testify the truth of the remarks of distinguished foreigners on our country?—of *Mr. Lyell*, the great geologist, for instance, who has written of it:—

"*One of the first peculiarities that must strike a foreigner in the United States, is the deference paid universally to the sex, without regard to rank or station;*" and again says a distinguished writer of another country—*Chevalier:*—"*Not only does the American Mechanic and Farmer relieve, as much as possible, his wife from all severe labour, all disagreeable employments, but there is also, in relation to them, and to women in general, a disposition to oblige, that is unknown among us, even in men who pique themselves upon cultivation of mind and literary taste.*" Such is the true glory of which all nations may be proud. Finally, Mr. S. said he would condense in the fewest words the sentiment with which their presence inspired him, and in which he was sure he would have the concurrence of all the gentlemen present:—

"Respect for women—*the true measure of civilization in all ages and countries.*"

Many gentlemen were prompted by felicitous compliments and allusions to themselves, and to localities, and institutions, with which they were connected, to enliven and instruct the company with thoughts and reflections well conceived, and most happily expressed—of all these we shall hear more in the official account of the proceedings of one of those occasions to be ever remembered by those who benefited of its instructive exhibition, and partook of its entertainments, social and intellectual.

THE ESSEX COUNTY AGRICULTURAL FAIR

Followed the day after the one at Dedham. The venerable and highly respected President of it, J. W. Proctor (to whom our readers are indebted for the excellent and instructive essay on the culture of onions, in this number), was a guest at Dedham, and with great liberality and discretion, united in the praises bestowed on the excellent arrangements and products of the second Norfolk exhibition—at the same time claiming, very justly and forbearingly, credit for the influence that might be traced to the early example of Essex County, and especially to the edifying bearing and precepts of the ever to be honored by the friends of Agriculture—the late Timothy Pickering.

In weather there could be no greater contrast than in these two farmers' holidays—that at Dedham was all luminous and bright—the next day at Salem, was dark and drizzly; yet the attendance at the latter, if not so numerous, was as instructive and hearty as at the first—perhaps the more to be remembered, as it showed the earnestness and business qualities of those

who compose the society. The two coming closely together, were enough to prove that New England farmers, when they undertake anything, as such, are made neither of sugar nor salt—but are actuated by a zeal that will not allow them to be choked off by dust, or melted by rain, for we had the two alternately in all their plenitude.

Not the least agreeable part of these exhibitions is the preliminary collations, that sometimes occur at the mansion of some worthy friend of the cause. At Salem, as at Dedham, those who might be regarded as strangers within their gates, as well as officers of the society and others, passed an hour very pleasantly in that way—there at Mr. Gardner's—here at Mr. Silsbee's—honored be the name, were it alone for the father's sake.

Having been regaled with delicious fruits from his own garden, and certain other nice things that fell yet more immediately within the province of the lady of the house, we were conducted under the lead of the estimable President, and *again under the all-inspiring sound of martial music*, to the dinner table, where several hundred gentlemen, members of the society, were feasted on fruits, rivaling the display of it we had witnessed in the hall of exhibition, and with various bounteous provisions of a more substantial sort. At the Fair here, by the by, we saw the best looking of that best of all *pears*—the Sickle—that anywhere fell under our notice.

The President of the Society, aided by the very accomplished Secretary, the Hon. A. W. Dodge, administered with his accustomed judgment and felicity the hospitalities of the day. The occasion was favoured, among other invited guests, with the presence of the Hon. Mr. Cushing, the orator of the day, formerly a distinguished—"a fixed fact"—M. C.; one of a presence and cast of mind to make his mark wherever he goes.

The humble editor of this Journal being himself complimented by the venerable President—*laus est laudari, a laudato viro*—responded by saying that, when two years since he had listened with them at Lynn, to "the great master of American eloquence" (as called by one who is of the highest authority and example in such cases), he little expected to enjoy again so soon the pleasure of meeting them; but happily a just Providence hides from us the good as well as the ill it has in store for us. Mr. S. then recalled old reminiscences of Salem, when taken there, he and his family, a quarter of a century ago, by his friend the late COMMODORE BAINBRIDGE, on a visit to Mr. SPRAGUE, Senator SILSBEE, and the venerable MR. DERBY, whose absence he was sorry to note, as he knew his zeal for the cause—a zeal signified among other things, within the knowledge of the speaker by the accounts which he had himself published from Mr. Derby, as to the famous OAKS COW that yielded more than fourteen pounds of butter in a week, and a weight of milk, in a few weeks, greater than her own.

Mr. S. then adverted to his correspondence formerly with Mr. Pickering, on the subject of the importation of domestic animals, when he had been entrusted with investment of funds provided for that purpose by the Albemarle Agricultural Society, of Virginia, of which Mr. Madison was then the President. Here he read an extract from a letter he had received from Mr. Pickering, twenty-nine years ago, and published in the "American Farmer," in which he advanced the opinion which all time and experience had confirmed. "As to cattle," said Mr. P., "this last remark of Mr. Marshall induces me still further to think it advisable to search for the best of our own breeds, and from them to raise improved stocks: not to the exclusion of European cattle, though I am far from thinking the large breeds (which seem to be the general object of importers) the most eligible; except for those parts of our country that can furnish *rich grazing lands*.—For the rest, cattle of moderate sizes would unquestionably be the most profitable. The quantity

of milk given by a cow of any breed should not, by any means, be a guide in the selection unless in union with its *quality*. Nine quarts of Mr. Cramps' Sussex cows' milk produced one pound of butter: whereas the best of the Lincolnshire breed (as mentioned by Mr. Young, in his East of England) giving six gallons (forty-eight quarts—enormous), yielded only seven or eight pounds of butter a week, or at the rate of one pound for twenty-one to twenty-four of milk. The Oaks Cow is extraordinary, not for the quantity, but for the quality of her milk. Mr. Quincy to whom she now [Feb. 6, 1821] belongs, informs me that he has often known one pound of butter to be made from five quarts of her milk."

This cow gave forty-four and a half pounds of milk a-day. A good likeness of her may be found in the old "American Farmer," vol. iii, page 179, issued 31st August, 1821.

But, said Mr. S., there was but one point on which he would presume to offer anything in the way of even suggestion to the farmers of Essex, and that was to refer to what he had read within a few days, in English journals, as to the *deodorizing, sanatary and fertilizing power of peat-charcoal.* It was, he said, known to all, that it was only in northern regions, that vegetable matter growing in wet or damp localities could be converted into peat. In more southern latitudes, the putrefactive process supervened to prevent it; but, in the marshes and low-grounds of New England, he apprehended there might exist inexhaustible beds of fertilizing matter, not yet fully developed, the value of which, should it be found on analysis to be of the best kind, was beyond all calculation. But to make it fully available, it needed, according to recent experience in Europe, to be carbonized and compounded with the feculent matter of cities.

He referred to, without venturing to trespass so far on their time as to read, certain passages in a late number of the "Mark Lane Express."*

He could not close even these desultory remarks, without bearing witness here, to what he had elsewhere and on all occasions testified—*the exemplary form and spirit of the proceedings of the Essex Agricultural Society.* It was clear that no temptation to conciliate popular favour, or to deprecate the displeasure of this man or that, could prevail with them to depart from the strict observance of their rules, or (as some societies do), to award their premiums with a view to public favour, in disregard, sometimes, of the strict rules of truth and justice. This testimony, humble as it was, he felt bound to give, as an editor of a journal that in its devotion to the general cause, knows neither local nor personal attachments, nor the influences of names, Societies or Institutes, however powerful by wealth or numbers. Finally, he said, in view and in admiration of the presence of farmers' wives and daughters, yesterday, at Dedham, he had proposed as an appropriate sentiment—*respect for woman*, as the true test of civilization; but here, to-day, in the presence of the hardy sons of old Essex—sound-headed, warm-hearted, hard-fisted practical farmers, he would present another feeling in the justice of which he had no less confidence.

"MAN—*his best relation, that of* HUSBAND—*his best occupation, that of* HUSBANDMAN."

The meeting, after a most feeling, eloquent and just tribute, from JUDGE WHITE to Col. Pickering, first President of the society, and a very appropriate response from Mr. WHITAKER, of Norfolk County, to a compliment from the venerable President to the Norfolk Agricultural Society, adjourned to hear, we doubt not, a very eloquent and profound discourse from Mr. Cushing, the orator of the day.

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* To be published in our next.

The next best thing for those who *could* not, or who had not an opportunity to *hear*, will be to *read it;* which we hope to do.

The next day found us on our way "bock agen," as Sandy said, when the farmer caught him coming out of his orchard from stealing his apples, and asked him "where he was going?" "*Bock agen*," said Sandy.

Without any necessity for stealing where apples and other good things are so abundant, we may be allowed in conclusion to say, that the man who goes through New England and "bock agen," without picking up something profitable in the way of information, or some kindness to be fondly remembered—

> "Oh bear him to some distant shore,
> Some solitary cell,
> Where none but savage monsters roar,
> And love ne'er deigns to dwell."

But shall all this rig-ma-role be brought to a close without a particular word for the

HORTICULTURAL EXHIBITIONS AND FESTIVALS

Which, at this season of the falling leaf, contribute so much and so happily to bring out the ripe fruits and fair flowers in and around the goodly city of Boston?

The never-failing kindness of friends to whom these attractive and good things are there committed, opened wide and free to us the doors of admission to everything that could charm the eye, in the way of fruits and flowers, and gratify another sense at other places. But how to do justice to all things, in an exhibition of horticultural excellence, where at one exhibition—Col. WILDER presented more than two hundred varieties of pears; and Mr. FRENCH not many less of apples, any plate of which would make a *fruitful* subject for pen or pencil? A lady, indulging in a *jeu de mot*, on a view of Col. W.'s contributions, was heard to whisper to her friend, that sooner than be without one such cultivator of good things, she would rather have *a pear of him!* Mr. HOVEY'S offerings, too, were very conspicuous. In truth, it would surprise us were one so well informed to stand like a finger post, ever pointing the way to excellence, yet never going it himself! On the contrary, he may well say to the readers of his excellent Horticultural Magazine, not only do as I *say*, but do as I *do*.—Alas, too happy the instructor in the art of terra-culture who has thus *the terra firma* on which to practice what he preaches. Oh! that we had but a cottage and six acres!

Visitors to the late exhibition in the Agricultural Hall at Boston had, at their very entrance, an inkling of what was coming, in being there met by a basket of *ninety-six perfect and luscious-looking Bartlett pears*, the produce of a single tree, *only two and a half years old!* It was, however, observed in our hearing by a bystander, to be an example of bad economy, to let it ripen so much fruit at so early an age; precocious bearing having, as he said, the same effect on the constitution of trees, that it is seen to have on other things. We said nothing, but took the hint, not knowing but we might "prent it too" in the mothers' department of "The Plough, the Loom and the Anvil." Be it, however, remembered, good reader, that it is only where various and prosperous industry *in other pursuits* near the plough, ensure fifty cents a dozen, that you may expect to see such pears as a common thing. Even blackberries were there exhibited, so large and juicy, improved by the arts which that society was formed to promote, that you would hardly recognize in it the *hybrid* kin of the poor seedy straggler that finds shelter and support scarcely noticed even by the birds, in the corners of our old rotten worm fences. Well, even as the maker of such fences keeps his best rail for a rider over all, so it would

seem have we reserved for the last, a subject which, to be justly appreciated, must be seen, as we have seen, now repeatedly, these displays of fruit and flowers, the growth of barren New England, various and magnificent beyond all our poor powers to describe. Ah! have not these Yankees abundant cause to bless the day, and the hour, when the good old Republicans of the South enacted the sound but too fluctuating policy, which, fitful and uncertain as it has been, yet took root enough to diversify the pursuits of northern industry, placing the consumer by the side of the producer, enabling him to avoid the cost of transportation to distant and uncertain markets, and to return to the bosom of the land the refuse of its products! And yet so poisoned sometimes, and perverse is public opinion, that for bringing these things to their notice, it is ten to one but, on reading these very hasty remarks, some southern friend will take his pen and send us the duplicate of the following argumentative epistle just received—"Free trade being a maxim with me ever since I was born, you will please strike my name from the list of your subscribers."

Having brought the manufacturer in New England to "take his place by the side of the agriculturist," her sons, who before that could one hold, one drive, and a third one steady the plough; find now a thousand avenues open to their industry; and their daughters who before remained at home as sterile as their own soil, or were driven to the remote frontiers to lead and bear the burdens of semi-savage life, now nestle under the wings of their mothers, until barely old enough to become mothers themselves, when they marry and soon hatch out new and happy broods to play and bask in the sunshine of domestic and prosperous industry—Hence it is that instead of falling farther and farther in the wake of North Carolina, as she did until 1820, we see Massachusetts coming out at this census 200,000 ahead of her, with a million of thriving people!

Alas! how long will experience, that best teacher of individuals, be *lost upon us as a nation?*

ON THE CULTIVATION OF ONIONS.

On a visit lately to New England, we were overtaken there by a letter from a gentleman of our own name, asking to be supplied with information on the culture of the onion crop.

We considered it a lucky chance for the writer, that his inquiries should have reached us exactly at the point where they could be best answered, for we remembered having read the article from Mr. Proctor, referred to in the following letter, but not having it at hand at the moment, we availed ourselves of the opportunity to place the letter in the hands of Mr. Proctor himself; of whom we may say here behind his back, and the more especially as we are not sure that he is a reader of this journal; that the Union could supply no better authority than he, on any point upon which he would undertake to speak from personal experience or observation.

And this we say in reference to every quality that should inspire respect and confidence.

To make assurance doubly sure, and to encourage among our readers the practice of asking for information on any particular subject where it is needed, we shall publish also, on some future occasion, the essay to which Mr. Proctor (the highly-respected President of the Essex Agricultural Society) refers.

Under some management of the Post Office, it rarely happens that printed matter and letters mailed at the same time reach their destination simultaneously, as they should do, for there is, we apprehend, no law that authorizes the discrimination. Thus it has happened that we have not received the essay to which our respected correspondent refers. It will probably come

along in the usual course of things, but if not, we have it in a copy of the "Transactions of the Agricultural Societies of Massachusetts," for which we are indebted, as for other marks of kind attention, and for which we are glad to make grateful acknowledgments, to Mr. Calhoun, Secretary of the Commonwealth.

DANVERS, *Sept. 27th*, 1850.

J. S. SKINNER, ESQ.

DEAR SIR—In reply to your friend's inquiry "as to the best mode of raising onions," I do not know that it will be in my power to add much of value to the hints contained in an essay on this subject published in our Transactions for the year 1847, and republished in several of the Journals of that year.

My attention having been repeatedly called to the subject, and having seen much of this cultivation, I will answer his inquiries as far as I am able.

1st. "How to prepare the ground?"

Select a good soil, that will produce fair crops of other vegetables. If in grass, let the ploughing be at least eight inches deep. Let the first crop be Indian corn, with a full dressing of manure. Let there be particular care that no weeds grow or spread their seed upon the land. Let the second crop be carrots, with a full supply of manure. Let the land be ploughed in the autumn, and thoroughly stirred up. Let it be well manured, and in the spring let it be again ploughed, and a coating of fine manure intermingled with its surface, which is to be thoroughly cleaned of all obstructions in the way of the seed-sowing machine, and then it will be in a condition for the reception of the seed of the onions. This is to be sown in rows 14 inches apart, and just thick enough to fill the rows with the plants when grown. Special care must be taken that no weeds grow among the plants, or between the rows. Nothing can be more detrimental than the growth of weeds to onions.

2d. "When to commence, when to plant them?"

As early in the spring as the ground will admit of the seed being sown. It is the first work in the field by our cultivators. Every preparatory movement is made in the autumn to insert the seed early in the spring. No harm comes to the plant from cold weather after they come up. Consequently nothing is lost by early planting, say the last of March, or the first of April.

3d. "How and when to gather them?"

When the tops begin to wither and fall, then the plants should be pulled and thrown in rows, about eight rows in one, and having been exposed to the sun about eight days, they will then be in a condition to be taken to the barn. Here they are relieved of all refuse material, and bunched or barrelled according to the market contemplated for their use.

4th. "The produce per acre?"

With proper care, without any of the blights to which the crop is sometimes exposed, the ordinary produce is from 300 to 500 bushels to the acre. I have seen fields the present season that yielded 600 bushels to the acre. This was considered a very fine crop. 500 bushels is a large crop. I have thus given answers to the direct inquiries of your correspondent. I may add, that the onion is the most valuable vegetable product of our town, more than 100,000 bushels having been raised annually for several years, and commanding an average price of 40 cents per bushel. If asked what are the most prominent things to be regarded in the culture of the onion, I should say—the kind of seed to be selected; the proper preparation and pulverization of the soil; the quantity and kind of manure to be applied; the keeping of the land free of weeds. When these things are properly done, there is very little hazard about this crop.

In 1849, some of our most careful cultivators lost their crops almost entire—and this without being able to explain the reason thereof. On the same lands very fair crops grew the present year. The best crop I have seen the present season grew on a piece of land that was sown with oats, immediately after the onions were gathered the last season; which oats were turned under late in the autumn, just before the ground froze up. In the spring, the surface was pulverized by the use of the cultivator, and between three and four loads of manure from the pig-pens applied to the surface. The onions when growing thus extended their fibres among the decaying oats beneath, and were invigorated by the same. The proprietor, who is one of our most intelligent cultivators, thinks the crop the best he ever raised; and that it was greatly benefitted by the green crop turned in the land. Having been fully supplied for several years with *stable manure*, *leached ashes*, and *muscle beds*, as he remarked, it needed a new support, and this it found in the vegetable crop turned in. He is so well pleased with the experiment, that he has sown oats on nearly all his onion fields the present year.

Herewith I forward a copy of the essay mentioned at the beginning.

I am, dear sir, very truly yours,

J. W. PROCTOR.

EXAMINATION OF THE COMMERCIAL VALUE OF HUMAN EXCRETÆ AND PEAT CHARCOAL MANURE.

By J. C. Nesbit, Esq., F.G.S., F.C.S., etc.

Public attention has, within these few years, been strongly directed to the necessity of preserving and making use of those fæcal matters which, though highly valuable as manure, have hitherto been allowed, from various causes, to run to waste.

Though no one has denied the value of human excretæ as manure, yet, as far as I am aware, no attempt has yet been made to determine by analysis their exact market value, and thus to compare them with other manures.

The subject was thought of sufficient importance to warrant our undertaking, in the laboratory, an investigation of the subject.

By weighing the excretions of one person for some time, it was found that the average weight of solid fæces was seven to eight ounces avoirdupois, and the urine three and a half pounds per diem. The weight of the latter will of course vary with the quantity of water drunk, the state of the air, &c.; but the solid materials given out in it daily will be nearly the same. The annual amounts will, therefore, be nearly one and a half cwt. solid excrement, and eleven cwt. of urine.

The following tables show the composition of these substances, as determined by Messrs. Bailey and E. Cottingham:—

COMPOSITION OF THE SOLID AND LIQUID EXCREMENTS OF MAN IN THE NATURAL STATE.

	Solid excrements.		Urine.	
	Per cent.	Per ton. lbs.	Per cent.	Per ton. lbs.
Moisture	73.25	1641	97.09	2175
Nitrogen	1.94	43	.79	18
Organic matter	22.01	493	1.30	29
Inorganic matter	2.80	63	.82	18
	100.00	2240	100.00	2240

COMPOSITION OF DRIED HUMAN EXCREMENTS.

	Solid excrements.		Urine.	
	Per cent.	Per ton. lbs.	Per cent.	Per ton. lbs.
Nitrogen	7.25	163	27.14	607
Organic matter	82.29	1843	44.69	1002
Inorganic matter	10.46	234	27.14	631
	100.00	2240	100.00	2240

COMPOSITION OF THE EXCREMENTS OF ONE MAN FOR ONE YEAR, AT THE RATE OF ONE AND A HALF CWT. OF SOLID FÆCES, AND ELEVEN CWT. OF URINE, PER ANNUM.

	Natural.		Dry.	
	Solid excrements. lbs.	Urine. lbs.	Solid excrements. lbs.	Urine. lbs.
Moisture	123.0	1196.3		
Nitrogen	3.3	9.9	3.3	9.9
Organic matter	37.0	15.9	4.7	15.9
Inorganic matter	4.7	9.9	37.0	9.9
	168.0	1232.0	45.0	35.7

From the previous table, it will be seen that, exclusive of water, we have 45 lbs. of dry matter in the solid fæces, and 35.7 lbs. of dry matter in the urine given out annually. The following table shows the composition of the mixed materials dry:—

COMPOSITION OF THE MIXED EXCRETÆ DRY.

	In annual amount of 80.8 lbs.		Per cent.	
	lbs.	lbs.	lbs.	lbs.
Nitrogen equal to *Ammonia* .	16.	13.2	19.8	16.33
Organic matter . . .		53.0		65.61
Inorganic matter . . .		14.6		18.06
containing *Phosphoric acid* .	2.67		3.3	
		80.8		100.00

From a comparison with other manures in the market, it would appear that the value of the 80.8 lbs. of dry solid matter is about 10*s*. In order to compare it properly with guano and other manures, we must see its composition when it contains twelve per cent. of moisture, the same as ordinary guano.

COMPOSITION OF MIXED HUMAN EXCREMENTS WITH TWELVE PER CENT. OF MOISTURE.

Nitrogen (equal to 17.42 per cent. of *ammonia*) . . .	14.37
Organic matter	57.74
Inorganic matter (containing 2.9 per cent. of *phosphoric acid*)	15.89
Moisture	12.00
	100.00

In the subjoined table, the dried excretæ are compared with rapecake and Peruvian guano. The ammonia in the guano is calculated at fourteen per cent., which is about the average:—

COMPARISON OF DRIED HUMAN EXCRETÆ WITH RAPECAKE AND GUANO.

	Rapecake.		Guano.		Mixed human excretæ.	
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Moisture . . .		195.8		268.8		269.0
Nitrogen . . .		115.4		258.6		322.0
equal to *ammonia* .	140.0		313.6		30.9	
Organic matter .		1654.2		938.6		1293.0
Inorganic matter . containing *phosphoric acid* .	43.7	274.6	224.0	774.0	64.9	356.0
		2240.0		2240.0		2240.0

From the previous table, it will be seen that the dried excretæ are preferable to the guano and rapecake as far as concerns the ammonia, and superior to the rapecake and inferior to the guano as respects the phosphoric acid. The latter could easily be supplied by bones or coprolites.

Many methods have been proposed for getting rid of the excess of moisture from fæcal matter. Among others, Mr. Rogers proposes to use peat charcoal, which not only absorbs water, but also possesses powerful deodorizing properties. Mr. Rogers, by means of a proper machine, mixes two parts of peat charcoal with one of excretæ, and the resulting material is at once ready for use or carriage.

The following is an analysis (by my assistant, Mr. Bailey, F. C. S.) of one of the mixtures made by Mr. Rogers, in his experiments at the Mechanics' Institute, Southampton-buildings, in October last:—

PEAT CHARCOAL MANURE.

	Per cent.		Per ton.	
	lbs.	lbs.	lbs.	lbs.
Moisture		30.66		687
Nitrogen		4.89		109
equal to *ammonia*	5.92			
Organic matter and charcoal		55.23		1237
Inorganic matter				207
containing *phosphoric acid*	0.63		14	

In order to compare the peat charcoal manure with guano, we will show its composition with twelve per cent. of moisture:—

	Per cent.		Per ton.	
Moisture		12.00		269
Nitrogen		6.20		139
equal to *ammonia*	7.5		167	
Organic matter and charcoal		70.09		1570
Inorganic matter		11.71		262
containing *phosphoric acid*	0.8		17	
		100.00		2240

The peat charcoal manure, with only twelve per cent. of moisture, and assisted with some phosphates, would, therefore, be more valuable than rape-cake, and nearly half the value of guano.

Agricultural and Scientific School, KENNINGTON, *June 20th*, 1850.

FARMERS' SONS AND MEDICAL SCHOOLS.

"Oh! happy, if he knew his happy state,
The swain who, free from business and debate,
Receives his easy food from nature's hand,
And just returns of cultivated land."

"The causes and the signs shall next be told,
Of every sickness that infects the fold."—VIRG. GEORG., III.

THE kindness with which you, Mr. Editor, received my remarks on pisciculture, encourages me to say a few words to the numerous readers of your valuable journal on another subject. It is (to quote from yourself) on "What Farmers' Sons should learn at School."

Under this title, you have advocated a knowledge of botanical terms and of general botany. I propose presenting a few reasons why farmers' sons should attend at least one course of lectures in a *medical school*, before they begin the responsible and arduous duties of farming on their own responsibility.

First, then, the knowledge there obtained is in every way useful to the intelligent farmer. To prove this, I will, in a few words, refer to the subjects taught and illustrated in a medical school, and point out some of their connections with the duties of the farmer.

1. *Chemistry.*—This most important branch is carefully taught, in all medical schools, in its most elementary parts. The composition of the atmosphere, with the changes which it undergoes from the mixture of various

gases—the product of decaying mineral and vegetable matters. The saturating point. Clouds—their formation. Water—its composition and various properties. How wonderful an agent it is in carrying nutrition to the radicles of plants. The different kinds of water—well, spring, river, rain, sea, hard, soft, &c. &c. The division of all matter into solid, fluid, and gaseous. The composition of the solid particles of the earth, and particularly the "upper crust." The connection between this and the composition of the various grains, grasses, straw, and fruit. How, in fact, the growth of the whole vegetable kingdom is merely a chemical process, by which the elements which are found in the atmosphere, water, and the soil, are transferred to, and transformed into, the waving grain of the harvest field, the rich farina of the potato crop, or the luscious juice of the apple, pear, quince, plum, or cherry.

But I need not dwell upon the many benefits, to the farmer-boy and the farmer-*man*, to be derived from this peculiarly farmer science. You doubtless recommended to him to read Liebig on Agricultural Chemistry. I say that no farmer can understand that, or any of Liebig's writings, without a *pretty good* previous knowledge of chemistry;* and this can be obtained in any medical school.

2. *Anatomy.*—Oh! some will say, what has a farmer to do with anatomy? I answer, very much. He is the father of his flocks, and many of the accidents, very simple in themselves, which now annually destroy a considerable per centage of his flocks, might be remedied, had the farmer only a little anatomical knowledge. Why, I have known a blacksmith (and he, by the by, from information picked up among his customers, is often the learned man of a country village), I have known a blacksmith save the life of a lamb which had been without *an anus*, by an operation which is one of some importance in surgery. Another saved the lives of several cows, which were bursting from over-feeding on new grass in the spring, by a most simple but important operation.

On the other hand, I have known many fine animals destroyed from having merely a leg broke, which might as easily have been cured as a like accident in the human subject. Great loss is annually suffered in this country, in the single article of the horse alone, from a want of a little information. Operations for hernia, castration, hydrocele, deformities, tumours, &c., might be safely performed by the intelligent farmer himself, instead of depending upon ignorant itinerant pretenders, whose skill resides chiefly in their unblushing effrontery.

3. *Surgery.*—This great branch of a course of medical lectures teaches the nature and treatment of just such diseases as the farmer comes in contact with. It will be remembered that the anatomy of the human subject is the anatomy of all other animals, and may consequently be applied with the greatest facility to the structure of all domestic animals. So also of surgery. The only difference is—and that is in the farmer's favour—that *human surgery* is a little more complex and scientific than that which would be necessary in the treatment of surgical diseases in animals. The farmer now does a number of operations mechanically, without understanding either the true character of the disease operated for, or the structure of the parts operated upon. I knew a very intelligent farmer, now quite wealthy, who could not kill a pig—did not know where to cut for the jugular and carotid!!!

* This is but too true, and hence Petzhold delivered his course, as he said, to enable his pupils to understand Liebig and other elaborate works. We have republished Petzhold, and can sell it (having the stereotyped plates) for not exceeding fifty cents a copy! Yet nobody asks for it. The fact is, we want *provisions to be made for appropriate instruction in the schools!* But farmers have not the spirit and the union to demand that.—*Ed. P. L. & A.*

4. Even *Obstetrics* should be understood by the farmer, at least as far as the mechanism of labour is concerned. I remember very well, when a boy, assisting a cow, under the direction of the farmer's wife, in the birth of a calf. This cow had always difficult labours, and was the best of twenty-one. She lived to a great age, and was finally choaked to death by a nubbin of corn, her teeth having become too bad to masticate such hard food. Even this accident might have been remedied, had any one used the probang, or some other instrument, to remove the nubbin from the pharynx.

5. *Materia Medica.*—Lectures on this branch teach the student not only the botanical terms used to describe plants, but their classification, structure, medical properties, and the doses proper for the sick human patient. It teaches their composition also, with the varied properties of root, bark, stem, leaf, flower, fruit, pod, bud, &c. &c.

6thly and lastly. The lecturer on practice speaks of the various diseases to which men are liable, with the use of medicines, whether mineral or vegetable, for their cure. In this way, the farmer will become familiar with many diseases which are common to man and animals. Nay, I see no objections to his practicing in his own family, especially in simple cases, until a physician can be obtained. He must do so, or not unfrequently lose a son, a daughter, or a "hand," for want of a little timely attention. I knew a farmer who well nigh lost a favourite son, from the bleeding of one of the arteries of his leg, cut while mowing with the scythe. Unacquainted with the circulation of the blood, he did not know that tying a handkerchief tightly *above* the cut would stop the blood.

Secondly, Mr. Editor, I will add a few words as to the *practicability* of the matter. All farmers' sons, or many of them, go to school during the winter season; indeed, they get their education by going during at least three months of each year, in the winter, to a neighbouring school. Now almost all the States have medical schools established in them, whose sessions are in the winter or in the spring seasons. It would be but little sacrifice or expense, for a farmer to send his sons and boys to such a school for *one season.*

The extra expense would, I feel persuaded, be more than met by the good which would result during the first year afterwards. Farmers must remember that there are two kinds of work—hand-work and head-work—that he is a poor creature whose "head will not save his heels." In other words, they should strive to cultivate the mind, and fill it with such knowledge as will be useful in future years. They would in this way *enrich* their sons most effectually, increase their sources of happiness, and add one great means of keeping them from light and profitless company. Give them a taste for reading and experimenting in the natural sciences, and they are safe. Every rock, tree, and animal then becomes a subject of study and observation; the source of exquisite pleasure to the farmer student, and the means of advancing the temporal interests of the wise and full-grown farmer. Agriculture will become a science, and the tiller of the soil the most respected, as he is now the most independent, of all the various classes of society.

My friend, John Delafield, Esq., of Ontario Co., N. Y., advocates an extensive system of scientific instruction, which embraces medicine as a part; but I fear he expects too much. Farmers have no time for all these things. They cannot be at once chemists, physicians, botanists, mineralogists, and geologists, but they may very easily attend *one* course of lectures delivered in a medical college.

As far as the writer has observed, physicians who unite the farmer with the professional man, are among the most intelligent and successful of those engaged in agricultural pursuits.

JAMES BRYAN, M. D.
Philadelphia.

COVER YOUR BARN-YARDS.

THE question has been raised *how far* a judicious man would haul, if it were *given to him*, barn-yard manure, accumulated under the usual circumstances. What are they? Made only from the offal of corn and wheat and other grain in open yards, exposed to be drenched and to have the life washed out of it not only with every rain, but with the water falling from the unspouted roofs of the barn and stables.

The too common error of farmers is to value manure by the bulk rather than by the *quality*. One might as well value a woman or a man in the same way. No, it's the spirit, the essence, that gives value to the one and the other. For some things, frequent washing is to be commended, but *not for manure*.

Says an English writer :—

"Who, with an eye in his head, and gifted with a particle of the reasoning faculties generally vouchsafed by a kind Providence, can help lamenting the wasteful mismanagement of manure on most farms, and *more particularly on those of farmers who all their lives have been brought up to nothing else* but agricultural employment, and who follow undeviatingly the practice of their fathers? What was more common than to see what ought to be manure exposed on an eminence to the alternate heats of summer, the blustering winds, the drenching rain and snow of winter—its essence wasting its fragrance in a puddling horse-pond, or working its devious course to a running stream? Does this not require reform? And what reform more appropriate than by the erection of a roof to protect the manure from the vicissitudes of the weather—sinking tanks to receive the liquid from the stables, cowhouses, and piggeries, and at least weekly pumping it on the mass which readily absorbs it—causing no undue fermentation, and helping to consolidate the whole as it daily accumulates by the continual addition of strata, thus converted into fertilizing substances? Such is the common practice at Gilgarran, not long since noticed as the most sterile spot in the county, but now producing crops equal to any in it.

"When I first commenced roofing my middens barn-yards, I had to contend with the jeers of my neighbours, and the deep-rooted prejudices of my own people, who foretold an absolute failure and wasteful expenditure. But what say they now? That the manure when cut into has the appearance and consistency of the blackest peat moss, and that the improvement in it the very first year paid for all the expense: and so has it been as respects my stackyard, which has for several years been permanently roofed. Great was the discouragement offered to me, whilst this operation was in progress; but how stands the case now? It is visited from far and near by our most distinguished agriculturists, and their praise of it and my middens is unqualified."

GRASSES.

A MUCH-RESPECTED subscriber in the South intimated a wish to have something said on the subject of grasses. Hence, we have caused the two engravings to be made which appear in this number.

Fig. 1 is of the sweet-scented grass, which some suppose imparts to the Philadelphia butter its unequalled richness and high flavour. Fig. 2 is of the orchard grass, so commonly called.

We have only room to promise, that in due time the request in this, as in all other cases, shall have our earnest attention. We wish to encourage the habit of calling for light on subjects, where it is supposed to be needed; as far as we have or can command, the means of affording the desired information.

Much more is yet to be said about grasses, and many more kinds to be illustrated; for, although such may be familiar to older readers, our wish is to address ourselves to and to benefit the young and the inexperienced. Without pretending to much knowledge ourselves, our resources are very extensive, and, after all, we must depend upon each other for light and knowledge, which,

like the radiation of heat, must be reflected from one mind to another, and very often from inferior to superior ones.

Botanical or specific character of distinction.—*Panicle* spiked, ovate oblong, flowers longer than their awns, on short partial stalks.

The *Blossom* of this grass is double, the outer one is entirely different from that of any other of the grasses; its outside is covered nearly to the top with stiff brown hairs, lying flat. *Stem* with two or three short hairs, and shining joints. Native of Britain.

Dissections.—1. Calyx or husks; 2. Stamens and anthers, or male parts of the flower or corolla, with the awn and feathered stigma; 3. Feathered stigma on the germ of the seed; 4. Corolla husks, the natural size.

On a brown sandy loam, the produce of this grass, in the beginning of April, is—

	Per acre. *lbs.*
Green food, or grass . . .	3488
Nutritive matter	95
At the season of flowering, the produce of grass is . . .	2827
When made into hay, the produce weighs	2103
At the time the seed is ripe, the produce is—green food . .	6125
Or when made into hay, weighs .	1837
The weight of nutritive matter afforded by this crop is . .	311

The weight of nutritive matter which is lost, therefore, by taking the crop when the grass is in flower, exceeds one-half of its value, or 188 *lbs.* per acre.

The proportional value which the grass, at the time the seed is ripe, bears to that of the time of flowering, is as 13 to 4.

The proportional value which the grass of the lattermath bears to that of the seed crop, is nearly as 13 to 9; and the proportional value or nourishment contained in the autumn grass exceeds that of the first grass of the spring, as 9 to 7.

The nutritive matter of this grass consists of the following vegetable principles in every 100 parts of the soluble extract: viz.—

Fig. 1. *Anthoxánthum Odoràtum, or sweet-scented Vernal Grass.*

Mucilage or starch	86
Sugar, or saccharine matter	8
Bitter extractive, or tonic matter	6
	100

The first growth of the herbage in spring affords—

Mucilage or starch	80
Sugar	2
Tonic, or bitter extractive matter	18
	100

The tonic, or bitter extractive matter, is here in a larger proportion than in the summer produce, or in that containing the flowering or seed culms, and the quantity of sugar is less. This grass gives the new-mown hay that delightful odour which is peculiar to it. It constitutes a portion of the herbage on pastures, on almost every kind of soil, although it attains to perfection on those only that are deep and moist. It thrives best, and is most productive and permanent when combined with other species of grasses, and it is therefore a true permanent pasture grass. When sown by itself, the sweet-scented vernal is not a profitable grass. Mr. Grant, of Leighton, laid down a field of considerable extent with this grass, and another adjoining field with the meadow foxtail, *Alopecùrus Praténsis*. A portion of clover seed was sown in each case: white clover with the former, and red clover with the latter grass. Both fields were open at the same time to sheep. The stock gave a decided preference to the meadow foxtail. We saw this trial conducted on a large scale, and with every impartiality, by Mr. Grant, and the conclusions agreed with the results of our own trials—that the sweet-scented vernal is a useful ingredient in pastures on a deep moist soil, but is unfit to be cultivated by itself.

Fig. 2. *Dáctylis glomeràta, or Round-panicled Cock's-foot Grass.*

The superior quantity of nutritive matter contained in the crop at the season of the seed being ripe, instead of at the time of flowering (generally supposed to be the period when grasses contain the most nourishment), is so far a wise provision of bountiful Providence, inasmuch that from the circumstances of this grass flowering in April and May its crop could not be taken at that period without sacrificing the greater number of different grasses not then in a state of inflorescence; as it is, when the seed of the sweet-scented vernal is ripe, the greater number of the superior pasture grasses are in various stages of inflorescence. The season of coming into flower is generally about the middle of April, and the seed is ripe in May, or early in June. The seed is furnished with an awn, which ejects it from the husks almost immediately that it is perfected, and this seed is therefore rarely found in what are termed hay seeds, being shed long before the ordinary period of hay-harvest.

Specific character of distinction.—Panicle distinctly branched, flowers in dense globular tufts, directed to one side, corolla somewhat awned, five-ribbed, taper-pointed. Native of Britain.

Dissections.—Fig. 1. Spikelet magnified; 2. Floret magnified; 1. Nectary natural size.

On a rich sandy loam, the produce of this grass, about the middle of April, is—

	Per acre. *lbs.*
Herbage, or green food . .	10209
Nutritive matter ditto . .	1189
At the time of flowering, the produce is, Grass, or green food .	27905
Or, Hay	11859
Nutritive matter ditto . .	1089
At the time the seed is ripe, the produce of grass is . .	26544
Or when made into hay . .	13272
Nutritive matter ditto . .	1451

The weight of nutritive matter in which

the crop at the time the seed is ripe exceeds that of the flowering crop, is as seven of five nearly.

The seed of cock's-foot is light, and the culms are comparatively succulent at this period of growth, which will account for the nutritive matter being then in a larger proportion. It should be observed, also, that the crop at the period of flowering is more succulent, and consequently more grateful to stock than the former, which circumstance counterbalances the value of the extra quantity of nutritive matter, and decides in favour of the period of flowering as the most proper to take the crop for hay. The fact of nutritive matter being abundant in the seed crop will not be lost sight of in disposing of the culm, by those who save the seed of the cock's-foot.

The produce of lattermath is—

	Per acre.
	lbs.
Herbage	11910
Nutritive matter in ditto	281

The proportional value which lattermath of cock's foot grass bears to that at the time of flowering, varies from five to three, and seven to two, according to the circumstances of soil and season.

This is one of the most valuable of the grasses. It springs very quickly after being cropped, and continues productive, with little interruption, throughout the season. Like every other of the more valuable pasture grasses, it will not when sown by itself form a close sward, but becomes tufty. When sown in certain proportions according to the soil, in combination with others, it is a very profitable plant. It requires to be depastured closely, under every circumstance, to reap the full advantage of its great merits. In the pastures most celebrated for fattening and keeping the largest quantity of stock in Devonshire, Lincolnshire, and in the vale of Aylesbury, which we minutely and carefully examined, we found cock's-foot in every instance to constitute a portion of the herbage. In the most skillfully managed of these pastures, the foliage or herbage of the cock's foot was to be distinguished only by an experienced eye from that of the *Alopecùrus praténsis*, *Pòa preténsis*, *Pòa triviàlis*, *Lòlium perénne*, *Cynosùrus cristàtus* and other fine-leaved grasses; a fact which proves the futility of the objections that have been raised without due consideration against cock's-foot, as to its being a *coarse* grass. It wants only to be combined with others in due proportion to the nature of the soil, and judiciously depastured, to render it equal if not superior in value to any of the superior or essential pasture grasses.

The cock's foot flowers from June till August, ripens its seed in July, or if the herbage of spring is eaten down to a late period, the seed does not ripen until August, or even the beginning of September. The late Mr. Rogers Parker, of Munden, Herts, was the first who collected the seed in any considerable bulk for farm practice, which was afterwards extended and brought into more general notice by Mr. Coke, of Norfolk.

Varieties of Barley.—The different varieties of Barley comprise the old common Barley, Chevalier, Brewers' Delight, Oakley, American, Nottingham Longear, Berkshire, &c. The Chevalier decidedly ranks first for malting purposes, and is most eagerly sought after by the brewer in every district. The objections urged against it are, that it does not produce so much per acre, as some of the other varieties. I am, however, inclined to think that, under proper cultivation and with occasional change of seed, there are few sorts that can be compared with it. I will give the result of some experiments carefully tried between 1836 and 1845 :—

	Corn.		Straw.		
In 1836.	Bush.	pecks.	Tons.	cwt.	lbs.
Chevalier - - -	42	0	0	14	1
Common Barley - -	42	0	0	15	6
American - - -	40	0	0	14	4
1841					
Brewers' Delight - -	57	1	1	6	6
Berkshire - - -	56	2	1	6	2
Chevalier - - -	60	1	1	7	6
Nottingham - - -	56	3	1	8	0
1845					
Brewers' Delight - -	52	0			
Chevalier - - -	48	3			

For "The Plough, the Loom, and the Anvil."

HORTICULTURAL MEMORANDA.

The past season has been peculiarly favourable for garden produce; every crop has been of the best quality and abundant. The markets have been well supplied and prices very generally good.

Those who take a pleasure and interest in the kitchen garden will have all their celery fully earthed up, that it may be well blanched before vegetation ceases. As soon as frost appears, secure all the beets for winter use, by putting them into a dry cellar and covered lightly with earth, or dig a hole about one foot deep, into a dry warm piece of ground, of sufficient capacity to contain the roots after they have been allowed to dry. Cover them lightly with straw and a few inches of soil, leaving a hole at the top to allow the moisture to pass off for two weeks, when a foot or eighteen inches of earth should cover the whole pit in a rounding manner, to throw off the rain and see that you finish in such a manner that no water will stand round your root-hills during winter. This method can be successfully adopted with all roots, taking care to avoid cutting or bruising any of the tubes.

Do not delay the boxing of cabbage, lettuce and cauliflower plants; the earlier it is done in noon the better, that the young plants may take hold of the soil before the severe weather approaches. Use very rich light soil, planting the plants from one to two inches apart. When they have taken root, sprinkle a few dry leaves among them. Do not cover your boxes or cold-frames at night till the frost is very severe. On the other hand, where lettuce have been planted into frames for winter use, cover them carefully every night with boards and mats, using glass sash whenever it can be obtained.

Where new plantations of asparagus or rhubarb are required, it is preferable to do it now.

Of these two vegetables, the quality of the crop depends entirely upon the richness of the soil. The farmer requires a light, deep, dry, warm soil, of a sandy, loamy texture; the latter a deep rich moist (but not wet) soil. Cover the beds with manure during winter, and dig it in amongst the roots in the spring. *Observe, the soil cannot be too rich or too deep.*

Where planting of deciduous trees or shrubs is intended to be done the coming spring, do it now, if practicable, upon all soils of a dry nature. At this period of the year, there is more time to do the business well. We do again and again urge upon every one who rents or owns, or has a yard of ground, to plant fruit trees and grapes. Adhere to the best native sorts; they are generally more profitable than those of foreign origin.

During the leisure hours of winter, some of your readers may wish to try the operation of root-grafting the apple. We have for the past five winters tried our hand with a few thousand on some occasions very successfully, when they have grown eighteen inches or two feet the first season. The first thing to procure is a quantity of fresh, sound roots, preferring those of two or three years old; place them in the cellar and cover them with earth, till January or February; next select, buy or beg the scions of the past seasons, wood from trees or sources that can be depended upon. Cut them in lengths of six inches, and place them in earth by the roots, or buried in the open air, leaving about one inch only above ground.

Any period during winter, when time permits, take the roots, and cut as many of them as you will use in a day into lengths of three inches, and from the size of a quill to that of your finger. Cut your scions or grafts also into the same lengths, placing the roots on a table to the left hand and the scions to the right; have some woollen or cotton thread, or any other thready material, cut into lengths of four to six inches, then proceed by adopting the method of *whip* or *tongue* grafting, as it is called, from the manner of cutting both the root and scion in a sloping direction on one of their sides, so that when brought together they exactly fit, and thus may be tied together. In former times, this species of grafting was performed without a slit or tongue, and in that case, the term of whip grafting was more applicable; subsequently the slit or tongue has been added, which has given rise to the other term. The scion and root being cut off obliquely at corresponding angles, as near as the operator can judge, make a slit nearly in the centre of the sloping face of the root downwards, and a corresponding tongue in the scion upwards. This is called tonguing; the tongue or wedge-like process forming the upper part of the sloping face of the scion is then inserted downwards in the cleft of the root—the inner barks of both being brought closely to unite on one side so as not to be displaced by tying, which should be done immediately with the material recommended above, brought in a neat manner several times round the union. When finished, place the grafted roots neatly in boxes of soil, covered to an eye from the top all properly named. As early as

spring will admit, prepare a piece of fine, rich ground, wherein plant your grafts, leaving only one or two eyes above ground, in rows one foot apart and three inches from plant to plant; press the soil firm about the roots. Keep clear of weeds, and cultivate well, to ensure a rapid growth. The second year remove them to rows three feet wide, and plant one foot apart till they grow seven to nine feet high, when they are ready for sale or final orchard planting.

NEW VEGETABLES.

To J. S. Skinner, Esq., *Editor of "The Plough, the Loom, and the Anvil."*

My dear Sir—Doctor J. J. Von Tschudi, in his travels in Peru, mentions that "there are four kinds of tuberous plants successfully cultivated in the Sierra, viz., the potato, the ulluco, the oca and the mashua. Of potatoes, there are *several varieties, and all growing in perfection.* The ulluco (tropœolum tuberosum) is smaller than the potato, and is very various in its form, being either round, oblong, straight, or curved. The skin is thin, of a reddish-yellow colour, and the inside is green. When simply boiled in water, it is insipid, but is very savory when cooked as a *picante.* The oca (oxalis tuberosa) is an oval-shaped root; the skin pale red, and the inside white. It is watery, and has a sweetish taste; for which reason it is much liked by the Peruvians. The mashua is the root of a plant, as yet unknown to botanists. It is cultivated and cooked in the same manner as those already described. In form, however, it differs from them all. It is of a flat pyramidal shape, and the lower end terminates in a fibrous point. It is watery and insipid to the taste, but is, nevertheless, much eaten by the Serranos. As the mashua roots will not keep, they are not transported from the places in which they are grown, and, therefore, are not known in Lima. The Indians use the mashua as a medicine; they consider it an efficacious remedy in cases of dropsy, indigestion, and dysentery. He also says that the quina (chenopodium quinoa, L.) is a pleasant and nutritious article of food. The leaves, before it attains full maturity, are eaten like spinach; but it is the seed which are most generally used as food. They are prepared in a variety of ways, but most frequently boiled in milk or in broth, and sometimes cooked with cheese and Spanish pepper. Experiments in the cultivation of *this* plant have been tried in some parts of Germany with considerable success. It were wished that its general cultivation could be introduced throughout Europe (and why not in the United States), for during the prevalence of the potato rot this plant would be found of great utility."

My reason for troubling you with the above extract is, that I thought it probable that you might recommend one or all of them to be tried in this country. If, as I have long thought, one cause of the decline of our potato is that it has depreciated by constantly using the same seed, it might be as well to introduce anew one of the varieties above mentioned, from its native soil and climate. And by trying the other plants mentioned by this learned author, who knows whether a great acquisition might not be made to our present stock of culinary vegetables.

I am truly yours,
P. A. BROWNE.

Note by the Editor.—The last, Quinoa, ought undoubtedly to have a fair trial. We know a gentleman in New York, Mr. T., from Connecticut, who had resided some years in Peru. He spoke of it highly, used it at his table in New York, and promised to afford us an opportunity to taste it, but, *forgot it!* The most promising antidote or preventive of the potato rot, that we have seen mentioned, is the *peat charcoal*, for which see this number and more in our next.

EXHIBITION OF THE INDUSTRY OF ALL NATIONS IN ENGLAND.

A French paper, *La Presse*, speaks of some marvellous wheat, obtained by the Messrs. Dessau, by steeping the seed corn in some new preparation, which wheat is destined for exhibition in Hyde Park, at the great Fair.

The magnificence of this wheat, both in straw and ear, is represented as having excited universal admiration, and "it is expected to do the greatest honour to French agriculture."

It may not be generally known, says the *London Agricultural Gazette*, that medals are offered at the exhibition of next year for the best sacks of wheat, barley, oats, rye, beans, and peas respectively. Any one who wishes to compete must send a notice of his intention to the nearest local committee connected with the exhibition, during the course of next month, which is the latest period of entry; and from the same source he may obtain instructions for the further steps necessary to be taken. Foreigners will, no doubt, compete for these prizes, and our farmers, we imagine, would not like to hold back. The characters as to weight, quality, and uniformity of sample will determine the merit of the different parcels exhibited, and certainly there are, in this country, varieties good enough which have been harvested well enough to furnish specimens qualified for a good place in what *may* be made, and no doubt *will* be made, by foreigners, if not by ourselves, a very interesting section of the exhibition.

We should be glad to learn that some wheat of Mr. Coads, of St. Mary's county, Md., is to be exhibited, for we think it would "do honour" to *American* agriculture.

Some of it has been sent to the patent office, whence the original seed was distributed some years since.

We have had the pleasure to send a few grains to an old friend in Maryland, who well knows what to do with it when he puts his hand on a good article.

Some has been sent, too, to Mr. Colt, of Paterson, New Jersey, where it will be sure of being well attended to. We doubt not that before this goes to press, there will have been a full display of wheat and of other things at the Maryland Cattle Show. We shall be disappointed if that fair does not compare well with any in the Union, but the necessity of going to press in the meantime, makes it impossible for us to give even the general account, which the character of this paper will alone admit of.

In the many pages devoted in this number to Eastern Cattle Shows, it is only pretended to give a running sketch of matters and things in general, as they appeared on a cursory view, and because we think it useful to present to the view of readers in one section, how they "carry on the war" in other parts of the country.

Flannel Cakes.—Put a tablespoonful of butter into a quart of milk, and warm them together till the butter has melted; then stir it well, and set it away to cool. Beat five eggs as light as possible, and stir them into the milk in turn with three pints of sifted flour; add a small teaspoonful of salt, and a large tablespoonful and a half of the best fresh yeast. Set the pan of batter near the fire to rise; and if the yeast is good, it will be light in three hours. Then bake it on a griddle in the manner of buckwheat cakes. Send them to table hot, and cut across into four pieces. This batter may be baked in waffle irons. If so, send to table with the cakes powdered with white sugar and cinnamon.

FROM ST. VINCENT.

KINGSTOWN, ST. VINCENT, *July* 16, 1850.

THE ship Catharine Elizabeth, from London, arrived here on the 10th instant, having a patented machine on board for extracting or squeezing juice from sugar-cane. The machine is a square iron box, containing rollers which are put in motion by steam. Heretofore the most approved machines have not produced more than 55 per cent. of juice, whereas the cane contains 90, evidently leaving the greatest room for improvement.

On the 14th instant, in the presence of the Lieutenant-Governor and a strong muster of planters and scientific gentlemen, the necessary preparations having been made, the engine was set to work, and the first experiment resulted in completely abstracting the juice from 100 pounds of sugar-cane in sixty-three seconds, which was not an exhibition of the uttermost power of the engine, inasmuch as the fourth tube being out of order, consequently only three-fourths of the actual power was exhibited. A second experiment was made on canes cut four months, of which much of their juice had evaporated—nevertheless sixty-five and a half pounds of juice were extracted from 100 pounds of cane in forty-four seconds. The third experiment was made on 100 pounds of cane cut only one month, and in thirty-six seconds seventy-eight and a half pounds of juice were obtained, which is an improvement unexampled in magnitude, importance and utility. Besides this, it was distinctly shown that while the new mode of pressure extracted so completely the juice of the interior of the cane, its knobs and rind were left completely untouched, which is an important advantage, as it is there that the green wax and other objectionable matter is contained, and it is there that the old roller machine unfortunately pressed—a difficulty insurmountable in the roller system, yet effectually obviated by this new process. This engine is the greatest ever discovered, and will increase, if applied, the sugar crop of the world fully one-third.—*New York Express.*

THE RECIPROCITY WITH CANADA.

A TORONTO paper estimates the surplus wheat crop of Canada this season at 7,000,000 more than that of last year, which was 4,000,000, making 11,000,000 for export.

The object of the reciprocity bill is to admit this wheat *duty free*, in order that our own wheat may be cheapened. Land in Canada sells for *one dollar*, that would be worth within the Union *five dollars*. The object of the reciprocity bill is to admit the products of this land *duty free*, in order that our land may be cheapened.

A year or eighteen months since, *un-"common sense"* in *the Union* charged us with desiring to limit the intercourse with Great Britain, in order that the manufacturers might be enabled to obtain cheap food at the expense of the farmers. The opponents of protection—those who call themselves free traders—now desire to admit Canadian produce duty free, that food may be cheaper, while the friends of protection oppose the reciprocity bill on the ground that it would ruin our own farmers, who would have to buy their iron where they sold their food, and buy their cloth where they sold their wool, whereas the Canadian would sell his food and his wool in our *protected* market, and buy their iron and their cloth where they pleased. Are our farmers prepared to grant to the Canadians the enjoyment of *all the rights* of a citizen, while *exempting him from the performance of a single duty?* If not, it is time for them to look to the movements of Congress in regard to this measure.

PROSPECTS OF THE PLANTER.

THE latest accounts from England represent that market as without animation for yarns, and that no stocks are pressed upon it. Piece goods are dull, with unremunerative prices, and stocks on the increase. There has, in the last month, been a decline equal to about 2½ per cent. on yarns, and 5 per cent. on goods from the highest point; and there does not appear reason to expect any improvement in the demand, as to lead to an advance in this market, unless some fresh disaster attend the new crop of cotton.

The only *hope* is in the continuance of short crops, produced by frosts, freshets, and other circumstances that would, under a natural system of free-trade, be almost a cause of *despair*. It is really time that the planter should open his eyes to the ruinous character of the trade he is compelled to maintain. Let him look for the true and only remedy to the fact that the latest Liverpool circulars state that the only market from which there is "good demand" is *the highly protected* Germany, while at home, in England, "there is little doing for home consumption," and yet that he is closing our own markets for the purpose of securing the power to clothe the labourers of Ireland and England, who have so little to give in exchange for food that they have almost nothing to spare for clothing.

THE WASTE MANURES OF WASHINGTON CITY.

There is no place within our knowledge where so much of the elements of agricultural productions is thrown away, which might be so easily availed of, as in Washington, D. C., where so many hundreds are congregated in a few buildings.

What a speculation for some man of a little enterprise, who would devise the means of saving it.

Waste of Manure.—While you are descanting upon the value of urea as manure, and deploring the waste of it, from want of arrangement for procuring it from the drainage of cities and towns, I suggest an appeal to the Agricultural Society, to turn their attention to this important subject, by such mode as may appear to them best suited—perhaps by the offer of premiums for the best plans. The moment is favourable, as it may be well combined with whatever measures may be recommended by the Health of Town Committees. If some spirited individual or local association would show the way in some country town, the principle would soon extend itself I apprehend there cannot be a doubt that in the present demand for manures, some well-digested plan would yield a satisfactory profit upon the outlay. A scheme was formerly proposed of carrying all the drainage of London to excavations at the Isle of Dogs, and I doubt not that the demand for it as manure would afford an ample profit.

Extracts from the American Farmer for December, 1849.—"We had an opportunity of examining the five yearling ewes just imported by Col. J. W. Ware, near Berryville, Clarke county, Virginia, whilst passing through this city (Baltimore) to his residence, and have no hesitation in expressing the opinion that finer ewe sheep of their age were never seen in any country. The first prize of £20 sterling was awarded them by the Royal Agricultural Society of England, at their fair, at Norwich, July 19, 1849. We have seen the certificate testifying in due form to their identity, and were permitted to peruse the letter from the gentleman who forwarded them, which expresses the belief, 'that they are the best five yearling ewes in the world, averaging, when sheared, at sixteen months old, the great weight of 220 pounds each.' Col. Ware gave orders for the *best*, to take the high prize of the Royal Agricultural Society of England, and procured the whole lot. A long voyage across the Atlantic, and being cooped in too confined a vehicle, of course has somewhat soiled their fleece, but they all appear to be in fine health; and no doubt when they have had time to recruit on the fine highlands of Clarke county, if they safely pass through the ensuing winter, they will make such a show, in the pens at our next fair, as will astonish the natives. The public gratitude is due to Col. Ware for his liberality in thus securing to our country such valuable breeders.

"Col. Ware recently sold, on the farm, a lot of fifty muttons, of his improved Cotswolds and crosses, to go to New York, as follows: five at $35 each, $175; five at $25 each, $125; forty at $10 each, $400; making $700 for the lot of fifty, and averaging $14 each. Higher prices were offered for the top alone, but Col. Ware refused to separate them. The forty were of different grades of the Cotswolds, but the last of these not being so good, reduced the price of the whole lot."

LITERARY NOTICE.

Massachusetts State Record.—An annual of some 250 to 300 pages is very handsomely gotten up, and published, in Boston, by James French, Esq., 78 Washington Street—the like whereof we should be glad to see published in every State in the Union. The country is entirely too large to think of such a work for the Union, without having recourse to facts gathered, in the first instance, within State limits, if not by State authority; and it is really difficult to see how enlightened legislation can be carried on without the aid of such very useful compilations as the one before us, which is not only "designed" but well fitted to serve as a book of reference, of facts and explanations, in respect to matters, useful and interesting, which may exist or transpire within the limits of the commonwealth of Massachusetts. We commend it to the notice of all who wish to be familiar with the growth of a community, that is increasing beyond example, in all the elements of physical and moral power.

TO ALL WHOM IT MAY CONCERN—GREETING:

CASH paid for October number:—

Paper maker	$108 30
Stereotyper	40 00
Printer	80 19
Binder	25 27
Clerk hire	51 83
Office rent	8 33
Postage, freight, &c.	22 18
Engraver	10 00
Total for the month	$346 10

Will gentlemen who are perfectly *willing* to pay, be so good as to consider that on their *performance* do we entirely depend for a livelihood. Payments made now, for this volume, can't be called payments *in advance*, which the terms require, because more than one-third of the year has expired, and we have to pay *every month;* and, determined from the first to do that or give up the enterprise, we again repeat the request and the hope, that our subscribers will please at once send the amount by mail, at *our risk and cost.* If they owe $3 and will send $5, they shall have a receipt for two years. All we ask is that they will do as they would be done by.

It's not an idle or a lazy man, be it admitted, who can earn the above every month with his own three fingers; and surely he who does deserves as much more as will provide him bread. We try to give a full equivalent for all we ask, and should any one so far take offence as to withdraw, we hope others will fill up the gap.—*Ed. P. L. & A.*

CAMPTON CHURCH-YARD.

(BEDFORDSHIRE.)

TO THE MEMORY OF ROBERT BLOOMFIELD.

Affectionately dedicated to his son Charles.

BY L. M. THORNTON, AUTHOR OF "SACRED POEMS."

He sleeps within this lone Church-yard
  Whose like again we ne'er may see,
Whose lays have melted many a heart,
  And will till dead be sympathy.

Long as the earth receiveth seed,
  Long as we harvests hail with joy,
So long, thou chaste and rural bard,
  Shall live thy matchless "Farmer's Boy."

Not every Poet at life's close
  Hath satisfaction felt like thine:
Thou didst revere a Deity,*
  And show'd his power in ev'ry line.

Reader, believe, as thou his lays
  With an impartial eye doth scan,
'Tis much to be a *bard* like him,
  And more to be *so pure a man.*

* "I rejoice in the sense expressed, not only of his genius, but of his pure, benevolent amiable virtue, his affectionate veneration for the Deity, and his good will to all."—CAPEL LOFFT.

☞The letters from Mr. Carey to the Secretary of the Treasury—illustrating, as we believe, beyond all dispute, the perfect "Harmony of Interests" between all our great branches of industry—*Agricultural, Manufacturing, and Commercial*—will be brought to a close in the next number of "The Plough, the Loom, and the Anvil."

The space which they have occupied will, thereafter, be appropriated to articles more diversified, and, in the common acceptation, more *practical;* but we sadly misapprehend both the character of our readers and our own duty, if their wishes, as well as their interests, have not been best consulted, in thus enabling them to see, once and for all, how deeply and peculiarly *the cultivators of the soil*—the producers of the materials of manufacture and commerce—are concerned in the *legislative policy of the country;* and in understanding how harmoniously every great interest advances in the march to the highest degree of improvement, when that policy has a tendency to insure good reward at home to the labour employed *in every industrial pursuit for which our country possesses the natural resources!* Can any one point us to a subject more immediately connected with the practical welfare of the agriculturist? or one which, consequently, it more behoves an agricultural editor to elucidate, or his patrons to study? And where, or by whom, let us ask, is it likely to be discussed more impartially, or with better understanding of the subject, than in a journal which knows no party obligations, and has no party ends to be achieved? and by one who, possessing eminent qualifications, has studied it with a single eye to the dissemination of the truth and the promotion of the public interest?

For ourselves, from first to last, have we proclaimed a willingness to *hear both sides and to let both sides be heard!* Yet no one has ventured to question the accuracy of a single fact, the soundness of a single principle, or the fairness of a single argument raised in support of the principles set forth in these letters! Far, then, from deprecating the space they have occupied, may we not congratulate—we will not say the subscribers—but the *readers* of "The Plough, the Loom, and the Anvil," on having within their reach the most thorough exposition—unanswered because unanswerable—that has yet appeared in any form, on the effect of our ever-fluctuating protective policy, on every conceivable form of industrial employment, and every public interest liable to be effected by the action of government?

The farmer or planter who would repudiate such subjects as being, either above, or beneath, or otherwise, not within the proper scope of his studies and anxieties, seems to us to stultify and degrade himself to that low level where men become, as Mr. Jefferson said, fit to be "saddled and bridled," and ridden by demagogues, of whatever party, instead of thinking for themselves, and, that they may think wisely, praying forever, with Hector on the walls of Troy,

"*Ye Gods, give us but light.*"

Men are either fit for self-government or they are not. If not, let them at once yield all pretensions to it, and with it the God-like faculty of thought and reason. If not prepared for such an act of self-abasement, let them act on the consciousness that their first duty to themselves and their children is to study the bearing of public legislation on their own and the public happiness.

INQUIRY BY C. H. HINES, OF FRANKLIN, TENNESSEE.

P. S.—Will Mr. Skinner have the kindness to inform where some seed of the "chocolate corn" can be procured. I am desirous to plant the ensuing season. I have concluded it to be the same called "bruma" by those recommending it as an antidote for cholera.

Many years ago, I raised it in N. C., but have lost seed and can procure none.

C. H. H.

The seedmen of Philadelphia have various kinds of corn, but none that they know by that name.—*Ed. P. L. & A.*

CARBON, OR CHARCOAL, IN THE AIR.

A scientific estimate of the quantity of carbon or charcoal given out to the air by the breathing of all the animals in Great Britain, including men, is not less than 2,000,000 of tons.

A LESSON FOR PARENTS IN LAW.

The moral to be drawn from the following is the hint it gives to that most unamiable of all personages, the Parent in Law, who can find it in his or her heart to be neglectful and unkind to children, who have innocently and without any agency of their own been placed under their care.

The Robin.—As the robin appears to be a great favourite, perhaps the following fact may not be altogether uninteresting. Under my window a robin, in the spring, thought proper to build its nest, and there to securely perform the office of incubation; but in the mean time that "beauteous stranger of the grove"—that "messenger of spring"—clandestinely conveyed an egg to this abode of peace. The exact circumstances which attended the deposition of the egg by the cuckoo I cannot relate, and it is, I believe, a subject of controversy among naturalists, as to the identical mode it adopts for the completion of its purpose. Certain it is, however, that the egg was deposited, and that the depositor was a cuckoo. I never remember having seen a larger bird than the robin near the window, and I certainly did not hear the well-known cry. I recollect having once imagined that I heard the cry in the night, and remembering that beautiful passage in the "Pleasures of Hope"—

"And when the sun's last splendour lights the deep,
The woods, and waves, and murmuring winds asleep;
When fairy harps th' Hesperian planet hail,
And the lone Cuckoo sighs along the vale;"

I thought it was very possible that I was not deceived. It seems certain that, in many instances, the cuckoo does dislodge and destroy, or take away the eggs which she finds in the nest where she deposits her own; but it is not so clear that she eats them, notwithstanding the common supposition that she does in this country, as appears from the popular nursery rhyme—

"The Cuckoo's a fine bird,
He sings as he flies;
He brings us good tidings,
He tells us no lies.
He sucks little birds' eggs
To make his voice clear;
And when he sings 'Cuckoo,'
The summer is near."

I found that in my case the eggs were held sacred, but that the hatching of the young cuckoo was fatal to the legitimate brood of the foster-mother, as the young cuckoo had very unceremoniously ejected them from the nest; a feat which I should imagine was readily performed on account of his superior size and strength; and so far from resenting this conduct, the mother directed her whole attention to her merciless foster-child, and showed, in the care she took of him and the zeal with which she fed him, all the regard which she could have displayed towards her own offspring. The cuckoo, when strong enough to fly easily, would not assist by picking in the least degree, but would perch upon a neighbouring branch, and await with open mouth the expected morsel. The assiduity shown by the foster-mother in attending to all the wants of the usurper of its nest was truly astonishing; the disparity of size in the two birds rendered this display of maternal affection ludicrous, particularly as the robin followed its gigantic foster child from tree to tree to administer to its wants. M. Vaillant, the African traveller, tells us that the cuckoo in Africa always selects as a cradle for its progeny the nests of birds which feed in the same way, never those of birds which feed on grain, as knowing, by an unerring instinct, that the former were best adapted for supplying the young with proper food, inasmuch as the cuckoo almost exclusively feeds on insects and larvæ; but there is reason to suppose that the bird is not so nice in its selection in England; and even should it select a granivorous foster-mother, that bird will change its habits and assimilate them to those of the young cuckoo.

Quere—Does not this look very much like the exercise of a reasoning faculty?—*Edit. P. L. & A.*

MANAGEMENT OF PIGEONS.

It is often found difficult to get pigeons reconciled to a new home. They have an enlarged bump of locality, or some additional sense or instinct, of which we know nothing, that enables them, carry them where or how you will, to strike a "bee line" for home.

Some recommend plucking a few feathers from the wing, that prevents their flying, but to this a writer urges a reasonable objection, and says:—

"When I was a pigeon-fancier, I had what I consider a much better plan than plucking out the wing-feathers, recommended by one of your correspondents. I had found that my newly-bought pigeons were apt to fly away when they were liberated; and, in the first instance, I plucked their wings, as recommended by your correspondent; but I found these primary quill-feathers were a long time in

growing again, and the pigeons were in danger of being caught by the cats, &c. I therefore tied five or six of the quill feathers with a waxed thread, as being less liable to slip than common thread; and I found a fortnight's tying was quite long enough to get the birds acquainted with the place, as they never flew away when this plan was adopted."

The love of pigeons for their native home seems to supersede that natural affection which most animals show for their young. Pigeons which have for three or four years bred in a confined place, have, on being released, forsaken their young, although requiring all their care, and returned to their original haunts. A pigeon, which had been confined and made to pair with another, on being released, forsook him and her two young ones, eight days old, in order to return to a former partner. Although flying about in the neighbourhood, she never again came near them.

We once witnessed the case of a pigeon being struck and killed by a hawk. Its mate was so affected with fright, or with grief, that it never was seen to eat afterwards, and literally pined to death, seeming to be broken-hearted. This happened at Mount Hope, on Herring Bay.

Persons who breed Canary birds have many opportunities of watching their peculiar dispositions, and there appears to be as great a variety in their tempers as amongst human beings. The mate of a Canary bird which was sitting on her eggs was sometimes more intent on serenading than feeding her. When this was the case, she would quit her nest and chase him round and round the cage, pecking him violently with her beak, and showing her anger in a variety of ways. She would then return to her nest without attempting to feed herself, and the male would immediately, like a meek, obedient husband, attend to her wants, carrying her a plentiful supply of seed, groundsel, and egg. He then resumed his song, and she repeated her discipline whenever his notes were too much prolonged.

Would it not be well if all neglectful husbands could be served in like manner? Though, be it confessed, it would not be agreeable to witness the exhibition.

Mr. Knight, the intelligent nurseryman in the King's Road, Chelsea, who has done so much in introducing new and beautiful plants into this country, keeps a large number of toads in his stoves, as he finds them beneficial in destroying the wood lice, which injure his plants. The heat in some of his stoves is occasionally as high as 130 degrees, and yet the toads did not appear at all affected by it. If an insect was put five or six inches from one of them, it seized it with so much rapidity that it was difficult to perceive how it disappeared. On one occasion, a large toad ate four good-sized beetles, one after the other; he took them up in his fore feet, and when he got them endwise to his mouth, they were immediately swallowed. Toads are harmless animals, and of infinite use in a garden, consuming great numbers of slugs and destructive insects. They are certainly capable of attachment —indeed, what animal is not?—and when they are without fear their eyes are peculiarly soft and mild in their expression. They are, however, a loathed and persecuted species. Shakspeare characterizes them as 'ugly and venomous,' while Milton, as if to increase the odium against them, assimilates one of the species to the arch enemy of mankind.

I should be very glad to rescue these poor, unoffending animals from the cruelty which is so commonly practiced upon them. It is impossible to walk through a village without seeing several mummies of toads, sprawling with extended feet, having been beat flat by stones thrown at them by mischievous boys. Gardeners either cut them in two with their spades, or else destroy them in some other way; while every one seems to enjoy the misery which is inflicted on this unfortunate reptile. In short, they are surrounded by enemies, and the whole race would probably become extinct if they left their retreats in the day-time. Were people only to bear in mind that animals were created, not out of caprice, but to be useful to man, they would refrain from wantonly destroying them. Alas! how prone is man, shall we say above all animated creation, to inflict pain and to destroy life, unnecessarily! Were we not told that he is made after the image of his Maker, should we not think it was after the image of —— a very different being?

PLAIN DIRECTIONS FOR MAKING GOOD BUTTER, AS PRACTICED IN PENNSYLVANIA.

To say nothing of the importance of the subject itself, the signature to what follows would be sufficient to attract for the article the careful attention of every housekeeper, and especially of every butter-maker. Between good butter, and butter that is simply not good, there is as much difference as between genuine and counterfeit money; between an easy, well-bred man, from nature and associations; and the vulgar millionaire, who, because he can buy anything else, thinks he can buy good breeding; but do what he will, the *ears will stick out.*

Do we assume too much in saying, that the friends who are kindly doing what they can to extend the circulation of this journal, might safely refer to two communications in this number, as being in themselves worth the subscription for a year? We mean the one on the *cultivation of onions*, by Judge Proctor, and this, from Miss Leslie, on *making of butter*. On neither could there be better authority; and then, how well these two things—butter and onions—sometimes go together, either to "smother" the "dry meat" of a rabbit, or, as sauce for fat tripe, thoroughly well cleaned and well boiled!

Some good butter-makers in Pennsylvania prefer a *cool, well-ventilated*, dry cellar, to a spring-house, for a dairy. The danger is, in such case, that instead of keeping the cellar strictly and exclusively for that use, they will make a convenience of it for other things; for keeping vegetables, cold meat, &c., the least odour of which will affect the butter.

Others again maintain, that in the process of cleaning the butter of milk, there can be no harm in the use of *very pure and cold water;* nor would there seem to be any harm in resorting to that obvious expedient for accelerating that process, were it not for the danger of the indolence, or want of attention of the dairy woman, in completely working the water out again, to the very last drop; for, as here recommended, the complete expulsion of the last drop of milk is indispensable in the preparation of sweet butter, unless it be butter to be taken directly from the churn to the table, and there consumed at once.

This communication, with which we have been kindly favoured by Miss Leslie, supplies a *desideratum* we have been long wanting (*i. e.*), the process followed in the neighbourhood of Philadelphia, where, say what they may, is to be found the best butter in the United States.

About Baltimore, they seem to understand the method, as well as anywhere, so far as depends on dairy operations; but after all, it is not to be denied that there is a richness, and a pure, fresh high flavour, in the butter from the best dairies around Philadelphia, not elsewhere to be met with.

Finally, it may be well to refer the reader to an article in our July number, where it is stated that although the cream may be left to get sour before churning, it should always be taken from the milk *before the milk sours*.

DIRECTIONS FOR MAKING BUTTER.

Wash your milk-pans carefully every morning and every evening; and after each washing, scald them with boiling water, and let the water stand in them till it gets cold, then pour it out, and wipe the pans dry with a clean cloth. Let them stand all day in the hot sun; fill them all with cold water about half an hour, or more before milking time, and do not pour it off till you are ready to use the pans.

The best of all milk-pans are those of thick glass, and the next best are of white ware. Common brown earthenware is too porous, though it is very generally used. All milk-pans should be broad and shallow, that the cream may have more surface for rising to the top. Unless all the utensils are kept perfectly clean, sweet and every way nice, the butter will never be good.

When you have strained the milk into the pans, place them in the spring-house, sitting them down in the water. After the milk has stood twelve hours, skim off all the cream and deposit it in a large deep jar, or crock, which must be kept closely covered, and stirred up with a smooth round stick, at least twice a-day, and whenever you add fresh cream to it. This stirring is to prevent the butter from being injured by the skim that will gather over the surface of the cream. The cream must be sour before it is churned; but if it is bitter, or has any bad rancid taste, throw it away, as butter made from it will be unfit to eat. Always add to the cream-crock the stripping of the milk.

You should churn at least twice a-week; for, if allowed to stand too long, the cream and butter will most certainly be bad.

Have your churn very clean; scald it always before you use it; and then rinse and cool it with cold water. A barrel churn is best; but if you have only one or two cows a common upright churn, worked by a dash or staff, will do very well.

Strain the cream from the crock into the churn, and put on the lid closely. In warm weather, move the dash rather slowly up and down, as churning too fast will render the butter soft. When you find that the dash moves hurriedly and with difficulty, you may know that the butter has come; that is, it has separated from the thin fluid, and gathered into a lump, which has lodged round the bottom of the dash or staff. It is then unnecessary to

churn any longer. In cold weather, the butter is much more tardy in coming than in warm weather. To hasten it, place the churn near the fire, and keep it there all the time you are churning. You may also in winter accelerate it by taking off the lid of the churn for a moment, and pouring in a little boiling water. Winter butter will be whiter and less rich than that of spring, summer and autumn; but, nevertheless, it will, if the cows are well fed and everything properly managed, be perfectly sweet and good, and far superior for all purposes, and infinitely more wholesome than salt butter put up in firkins.

Philadelphia markets are well supplied all winter with plenty of nice fresh butter made into pounds, and printed. In that city, salt butter is never found on any genteel table, at any season.

When the cream has been sufficiently churned, and the butter all collected in the centre, take it out with a short-handled shallow wooden ladle, and put it into a clean wooden dish or pail, or a small tub. Squeeze and press it hard with the ladle, to get out all the milk that remains in it, which if left in will now cause the butter to spoil. Add a very little salt, and then squeeze and work it for a long time. Set it away in a cool place, for three hours, and then work it over again, squeezing and pressing it as hard as you can. A table with a marble top will be found of great advantage in working and making up butter. Weigh it and make it up into separate pounds, smoothing and shaping each pound handsomely, and stamping the top of each with a wooden butter print, dipped every time in a basin of cold water. Spread a clean linen cloth on a bench in the spring-house. Place the butter upon it, to stand till it becomes perfectly firm and hard. Then wrap each pound in a separate piece of clean linen, that has been dipped in cold water.

Pour the buttermilk into a clean crock, and set it in the spring-house, with a saucer for dipping it out, and keep the crock covered. The buttermilk will be excellent the first day; but on the second it will become too thick and sour, and should be given to pigs or poultry. Winter buttermilk is seldom very palatable.

Before you put away the churn, wash and scald it well, and the day that you use it again, keep it for an hour or two filled with cold water previous to putting in the cream.

This receipt for making butter is according to the method generally pursued at some of the best farm-houses in Pennsylvania; and if exactly followed, will be found very good. If the cows are well-fed, the badness of the butter will be caused only by mismanagement, such as want of cleanliness, keeping the cream too long before churning; neglecting to work all the milk out of the butter, when made; or to the too common practice of salting it so profusely as to render it unpleasant to the taste, and unfit for cakes or pastry. All these causes of bad butter are inexcusable, and can easily be avoided. Unless the cows have been allowed to feed where there are bitter weeds or garlic, the milk cannot naturally have any disagreeable taste. Of course, it is richer when the pasture is fine and luxuriant.

MISS LESLIE.

CREAM CHEESE.

The cheese so called (of which numbers are brought to the Philadelphia market during the summer,) is not made entirely of cream, but of milk warm from the cow (and therefore unskimmed), mixed with cream of the preceding evening. To a small tub of fresh new morning's milk, add the cream skimmed from an equal quantity of last night's milk. Mix the cream and new milk together; set them over the fire, and warm them to about blood-heat or 100° of the thermometer. Have ready a small cup of water, in which has been working all night a piece of rennet (the salt previously wiped off) of about four inches square. Stir the rennet-water into the vessel of mixed milk and cream (which you must first empty into a large pan or small tub), and set it in a warm place till the curd has completely formed, and the whey looks clear and greenish; then with a knife cut the curd into squares. Next, take a large thin straining-cloth, and press it down on the curd, so as to make the whey rise up through it. As the whey rises, dip it off with a saucer or skimming dish. When the whey is all out, put the curd into the cloth, and squeeze and press it with your hands till it becomes as dry as possible. Next, crumble the curd very fine with your hands, and salt it slightly. Then wash the straining-cloth very clean, and lay it in your cheese-hoop (a bottomless vessel about the size of a dinner-plate and perforated with small gimlet holes) put the crumbled curd into the cloth, and then fold the rest of the cloth closely over it. The cheese-hoop should be set on a clean wooden bench or table. Place upon it its round cover, so as to fit exactly; and lay on the top two bricks or a heavy stone. After it has stood six hours in the hoop or mould, turn the cheese, and let it stand six hours longer.

When you take out the cheese, rub it all over with a little fresh butter. Set it in a cool, dark, dry place (turning it every day) and in four or five days it will be fit for use. When once cut, it should be eaten immediately; but while it is uncut, it will keep several days in a cold place, turning it daily.

MISS LESLIE.

The Plough, the Loom, and the Anvil

Vol. III. DECEMBER, 1850. No. VI.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

CHAPTER TWENTY-THIRD.

HOW PROTECTION AFFECTS THE POLITICAL CONDITION OF MAN.

The larger the return to labour, the greater will be the power to accumulate capital. The larger the proportion which capital seeking to be employed bears to the labourers who are to employ it, the larger will be the wages of labour, the greater the power of the labourer to accumulate for himself, and the more perfect will be his control over the disposition of his labour and the application of its proceeds, whether to private or to public purposes.

The freeman chooses his employer, sells his labour, and disposes of the proceeds at his pleasure. The slave does none of these things. His master takes the produce of his labour, and returns him such portion as suits his pleasure.

Throughout the world, and in all ages, freedom has advanced with every increase in the ratio of wealth to population. When the people of England were poor, they were enslaved, but with growing wealth they have become more free. So has it been in Belgium and in France. So is it now in Russia and Germany, and so must it everywhere be. India is poor, and the many are slaves to the few. So is it in Ireland. Freedom is there unknown. The poor Irishman, limited to the labours of agriculture, desires a bit of land, and he gives the chief part of the product of his year's labour for permission to starve upon the balance, happy to be permitted to remain on payment of this enormous rent. He is the slave of the land-owner, without even the slave's right to claim of him support in case of sickness, or if, escaping from famine, he should survive to an age that deprives him of the power of labouring for his support. England employs fleets, paid for out of taxes imposed on starving Irishmen, to prevent the people of Brazil from *buying* black men, and women, and children, on the coast of Africa, while holding herself ready to *give* white men, and women, and children, to any who will carry them from her shores, and even to add thereto a portion of the cost of their transportation; and this she does without requiring the transporter to produce even the slightest evidence that they have been delivered at their destined port in "good order and well-conditioned." When Ireland shall become rich, labour will become valuable, and man will become free. When Italy was filled with prosperous communities, labour was productive, and it was in demand; and then men who had it to sell fixed the price at which it should be sold. With growing poverty, labour

ceased to be in demand, and the buyer fixed the price. The labourer then became a slave. If we follow the history of Tuscany, we can find men becoming enslaved as poverty succeeded wealth; and again may we trace them becoming more and more free, as wealth has grown with continued peace. So has it been in Egypt, and Sicily, and Spain. Everywhere poverty, or a deficiency of those aids to labour which constitute wealth, is, and has invariably been, the companion of slavery; and everywhere wealth, or an abundance of ploughs, and harrows, and horses, and cows, and oxen, and cultivated lands, and houses, and mills, is, and has invariably been the companion, and the cause, of freedom.

If protection be a "war upon labour and capital," it must tend to prevent the growth of wealth, and thus to deteriorate the political condition of man.

The farmer who exchanges his food with the man who produces iron by means of horses, wagons, canal-boats, merchants, ships, and sailors, gives much food for little iron. The iron man, who exchanges his products for food through the instrumentality of the same machinery, gives much iron for little food. The chief part of the product is swallowed up by the men who stand between, and grow rich while the producers remain poor. The growth of wealth is thus prevented, and inequality of political condition is maintained.

The farmer who exchanges directly with the producer of iron gives labour for labour. Both thus grow rich, because the class that desires to stand between has no opportunity of enriching themselves at their expense. Equality of condition is thus promoted.

The object of protection is that of bringing the consumer of food to take his place by the side of the producer of food, and thus promoting the growth of wealth and the improvement of political condition. That it does produce that effect, is obvious from the fact that, in periods of protection, such vast numbers seek our shores, and that immigration becomes stationary, or diminishes, with every approach towards that system which is usually denominated free trade.

The colonial system is based upon cheap labour. Protection seeks to increase the reward of labour. The one fills factories with children of tender years, and expels men to Canada and Australia; the other unites the men and sends the children to school.

The Irishman at home is a slave. He prays for permission to remain and pay in pounds sterling for quarters of acres, and his request is refused. Transfer him here and he becomes a freeman, choosing his employer and fixing the price of his labour. The Highlander is a slave that would gladly remain at home; but he is expelled to make room for sheep. One-ninth of the population of England are slaves to the parish beadle, eating the bread of enforced charity, and a large portion of the remaining eight-ninths are slaves to the policy which produces a constant recurrence of chills and fevers—overwork at small wages at one time, and no work at any wages at another. Transfer them here and they become freemen, selecting their employers and fixing the hours and the reward of labour. The Hindoo is a slave. His landlord's officers fix the quantity of land that he must cultivate, and the rent he must pay. He is not allowed, on payment even of the high survey assessment fixed on each field, to cultivate only those fields to which he gives the preference; his task is assigned to him, and he is constrained to occupy all such fields as are allotted to him by the revenue officers, and whether he cultivates them or not, he is saddled with the rent of all. If driven by these oppressions to fly and seek a subsistence elsewhere, he is followed wherever he goes and oppressed at discretion, or deprived of the advantages he might expect from a change of residence. If he work for wages, he is paid in money when grain is high, and in grain when it is low. He, there-

fore, has no power to determine the price of his labour. Could he be transferred here, he would be found an efficient labourer, and would consume more cotton in a week than he now does in a year, and by the change his political condition would be greatly improved.

Protection looks to the improvement in the political condition of the human race. To accomplish that object, it is needed that the value of man be raised, and that men should everywhere be placed in a condition to sell their labour to the highest bidder—to the man who will give in return the largest quantity of food, clothing, shelter, and other of the comforts of life. To enable the Hindoo to sell his labour and to fix its price, it is necessary to raise the price of his chief product, cotton. That is to be done by increasing the consumption, and that object is to be attained by diminishing the waste of labour attendant upon its transit between the producer and the consumer. Fill this country with furnaces and mills, and railroads will be made in every direction, and the consumption of cotton will speedily rise to twenty pounds per head, while millions of European labourers, mechanics, farmers, and capitalists will cross the Atlantic, and every million will be a customer for one-fourth as much as was consumed by the people of Great Britain and Ireland in 1847. The harmony of the interests of the cotton-growers throughout the world is perfect, and all the discord comes from the power of the exchangers to produce apparent discord.

It is asserted, however, that protection tends to build up a body of capitalists at the expense of the consumer, and thus produce inequality of condition. That such is the effect of *inadequate* protection is not to be doubted. So long as we continue under a *necessity* for seeking in England a market for our surplus products, her markets will fix the price for the world, and so long as we shall continue to be under a *necessity* for seeking there a small supply of cloth or iron, so long will the prices in her markets fix the price of all, and the domestic producer of cloth and iron will profit by the difference of freight both out and home. With this profit he takes the risk of ruin, which is of perpetual occurrence among the men of small capitals. Those who are already wealthy have but to stop their furnaces or mills until prices rise, and then they have the markets to themselves, for their poorer competitors have been ruined. Such is the history of many of the large fortunes accumulated by the manufacture of cloth and iron in this country, and such the almost universal history of every effort to establish manufactures south and west of New England.

Inadequate and uncertain protection benefits the farmer and planter little, while the uncertainty attending it tends to make the rich richer and the poor poorer, thus producing social and political inequality.

Adequate and certain protection, on the contrary, tends to the production of equality—first, because by its aid the *necessity* for depending on foreign markets for the sale of our products, or the supply of our wants, will be brought to an end, and thenceforth the prices, being fixed at home, will be steady, and then the smaller capitalist will be enabled to maintain competition with the larger one, with great advantage to the consumers—farmers, planters, and labourers; and, second, because its benefits will be, as they always have been, felt chiefly by the many with whom the price of labour constitutes the sole fund out of which they are to be maintained.

If we take the labour that is employed in the factories of the country, from one extremity to the other, it will be found that nearly the whole of it would be waste, if not so employed. If we take that which is employed in getting out the timber and the stone for building factories and furnaces, it will be found that a large portion of it would otherwise be waste. If we inquire into the operations of the farmer, we find that the vicinity of a factory, or

furnace, enables him to save much of the labour of transportation, and to sell many things that would otherwise be waste. Thus far, the advantage would seem to be all on the side of the employed, and not on that of the employer.

Let us now suppose that all protection were abolished, and that perfect freedom of trade were established, and that the result were, as it inevitably would be, to close every factory, furnace, rolling mill, and coal-mine in the country, and see what would be the result. The owners of such property would lose a few millions of dollars of rents, or profits, but the supply of fuel would be less by three millions of tons, that of iron would be less by eight hundred thousand tons, and that of cotton cloth would be less by almost a thousand millions of yards. The demand for the labour now employed in the production of those commodities would be at an end, and the spare-labour of men, and women, and children, and wagons, and horses, and the various things now used in and about factories and furnaces, would then be wasted, coal and iron and cloth would be doubled in price, and labour would be diminished in a corresponding degree. The power to import iron, or coal, or cloth, would not be increased by a single ton, or yard, and the people would be compelled to dispense with necessaries of life that are now readily obtained. The capitalists, whose means were locked up in factories or furnaces, would suffer some loss; but the mass of persons possessed of disengaged capital, and the receivers of *State* dividends, would be able to command, for the same reward, a much larger quantity of labour than before.

The object of protection is that of securing a demand for labour, and its tendency is to produce equality of condition. The jealousy of "overgrown capitalists" has caused many changes of policy; but, so far as they have tended to the abolition of protection, they have invariably tended to the production of inequality. The wealthy capitalist suffers some loss; but he is not ruined. A change takes place, and he is ready to avail himself of it, and at once regains all that had been lost, with vast increase. The small capitalist has been swept away, and his mill is in a state of ruin. By the time he can prepare himself to recommence his business, the chance being past, he is swept away again, and perhaps for the last time.

For months past, the rate of interest on a certain species of securities has been very low. The wealthy man could borrow at four per cent.; the poor man, requiring a small loan on a second-rate security, could scarcely obtain it at any price. The man who has coal to sell, or iron to sell, must have the aid of middlemen to act as endorsers upon the paper received from his customers, and their commissions absorb the profits. The wages of the miner have been greatly reduced, while the profits of the speculator have been increased. The reason of all this is, that, throughout the nation, there prevails no confidence in the future. It is seen that we are consuming more than we produce; that our exports do not pay for our imports; that we are running in debt; that furnaces and mills are being closed; and every one knows what must be the end of such a system. Re-enact the tariff of 1842, and the trade of the middleman would be at an end, because confidence in the future would be felt from one extremity of the land to the other. Should we not find in this some evidence of the soundness of the principle upon which it was based? The system which gives confidence must be right; that which destroys it must be wrong.

Confidence in the future—Hope—gives power to individuals and communities. It is that which enables the poor man to become rich, and the character of all legislative action is to be judged by its greater or less tendency to produce this effect. A review of the measures urged upon the nation by the advocates of the system miscalled free trade, shows, almost without an exception, they have tended to the destruction of confidence, and there-

fore to the production of the political revolutions referred to in the first chapter.

The direct effect of the insecurity that has existed has been to centralize the business of manufacture in one part of the Union and in the hands of a comparatively limited number of persons—such as could afford to take large risks, in hope of realizing large profits. Had the tariff of 1828 been made the settled law of the land, the Middle and Southern States would now be studded with factories and furnaces, and while the North and East would not have been less rich, they would be far richer, and the present inequality of condition would not now exist.

The power of the North, as compared with that of the South, is due to the jealousy of the former entertained by the latter, which has prevented the establishment of a decided system, having for its object the destruction of the English monopoly, and the ultimate establishment of perfect freedom of trade.

The object of the colonial system was that of taxing the world for the maintenance of a great mercantile, manufacturing, and landed aristocracy, and the mode of accomplishment was that of securing a monopoly of machinery. The object of protection is to break down that monopoly, and with it the aristocracy that collects for the people of Great Britain and the world these immense taxes, to be appropriated to the payment of fleets and armies officered by younger sons, and kept on foot for the maintenance of the existing inequality in Great Britain, Ireland, and India. All, therefore, who desire to see improvement in the political condition of the people of the world should advocate the system which tends to break down monopoly and establish perfect freedom of trade.

CHAPTER TWENTY-FOURTH.

HOW PROTECTION AFFECTS CREDIT—INDIVIDUAL AND NATIONAL.

THE existence of credit is evidence of the existence of confidence that the man who desires to obtain for a time the use of property intends to return it. The more universal this confidence, the more readily can the capitalist place his funds, and the larger will be the return. The more universal it is, the more readily can the labourer obtain the necessary aids to labour, and the more productive will be that labour. If protection be "a war upon labour and capital," it must tend to destroy the confidence of man in his fellow-man.

The object of protection is that of bringing the consumer to take his place by the side of the producer, exchanging labour for labour, and thus diminishing the *necessity* for credit. Its effect is to diminish the machinery of exchange, and thus to increase the productiveness of labour, and with it the *power* to obtain credit.

The object of the monopoly system is that of separating the consumer from the producer, and *compelling* both to repose confidence in distant men, thus increasing the *necessity* for credit. Its effect is that of increasing the machinery of exchange, and diminishing the productiveness of labour, and thus diminishing the *power* to obtain credit.

That such is its effect in the colonies of Great Britain, we know. In India, once so wealthy, the ordinary rate of interest is twelve per cent.; but the poor cultivator borrows seed at the rate of one hundred per cent. Credit there has no existence, and yet almost the whole exchanges of the country are made at a distance of many thousands of miles, by men in whom the consumer and producer are *compelled* to repose confidence.

In the West Indies, credit has almost entirely disappeared. In Canada,

even the government cannot effect loans without a guaranty from parliament. So is it throughout the whole range of colonies.

At home, capital is cheap, because of the want of general confidence. The capitalist takes two per cent.; but the labourer could not borrow at thirty per cent. The capitalist that owns machinery is enabled to dictate the terms upon which it shall be used by those who work. Sometimes he employs many work-people. At others few. Sometimes he works long time, and at others short time. At all times his people obtain but a small proportion of the products of labour; but at many times they obtain but *a very* small proportion, while at others they are unable to obtain the use of machinery at any price.

Abroad, the credit of English merchants is falling daily. But recently, there were in the great city of Liverpool, scarcely half a dozen houses that could be trusted with a cargo of cotton. Such are the effects of the system in which "Commerce is king," and the consumer and the producer are placed at the mercy of the exchanger.

At no period in this country did confidence grow more rapidly than in the period between 1830 and 1834. At none did it decline with such rapidity as between 1835 and 1842. With the action of the tariff of 1842, it was restored, but with that of 1846 it again declines. There is no demand for capital, and it is cheap. There is little demand for labour, and it too is cheap.

Never, probably, since the settlement of the country, did the poor man find so much difficulty in obtaining the aid of capital, as in 1842, the period of free trade. Never has he found it more easy than between 1844 and 1847. The period of distrust has again arrived. Money is said to be abundant, but the security must be undoubted, and the poor man pays two per cent. a month for the use of capital that the rich man cannot invest to produce him more than four per cent. per annum. There is no confidence existing.

"Notwithstanding the cheapness and abundance of money," says the New York Herald, "no one seems disposed to touch any thing in the way of speculation, and capitalists prefer loaning money at four per cent. interest, on good security, to purchasing stocks at present prices. They say that when they lend money on first-rate security, at a low rate of interest, they are sure of the principal and a small amount of interest, when they want it."

The re-establishment of the tariff of 1842 would restore confidence, and produce a demand for labour, and wages would rise—and a demand for capital, the price of which would also rise, and thus it would appear that in protection is to be found the harmony of interest between the labourer and the capitalist.

NATIONAL CREDIT.

From 1830 to 1835, the national credit grew, for we paid for what we imported. From 1835 to 1840, credit declined, for we ran largely in debt for cloth and iron, for which our exports could not pay. In 1842, national credit disappeared, for we were unable to pay even the interest on our debts. From 1843 to 1848, national credit grew, for we paid interest and commenced the reduction of the debt. In the last two years we have gone largely in debt, and must now either diminish our imports or run further into debt.

How long we can continue to do this, does not depend upon ourselves. Any circumstance producing a change in the rate of interest in Europe, would cause our certificates of debt to be returned upon us for payment, and what then would be the state of the national credit? A nation that is largely in debt is always in danger of losing its credit.

CHAPTER TWENTY-FIFTH.

HOW PROTECTION AFFECTS REVENUE AND EXPENDITURE.

THE more men live and work in connection with each other, the greater is their *power* to protect themselves. The more widely they are separated from each other, the greater is their *necessity* for seeking protection from others.

The more they live in connection with each other, the larger will be the product of their labour, and the greater will be their power to contribute towards the maintenance of peace and order. The less they live in connection with each other, the less productive will be their labour, and the less will be their power to contribute to that object.

With every increase in the productiveness of labour, the power of self-government thus increases, with increased power to contribute towards the expenditures incident to the maintenance of government; and with every diminution therein, the power of self-government decreases, with diminished power to contribute towards the public revenue required for paying others for performing the duties of government.

If protection be, as is asserted, a "war upon labour and capital," it must increase the necessity for government by others, and diminish the power to contribute towards its maintenance.

The object of protection is, however, that of enabling men to live in connection with each other, the consumer taking his place by the side of the producer, each protecting, and protected by, the other. This would seem to diminish the *necessity* for seeking protection from others. Another object of protection is that of enabling men to exchange with each other, giving labour for labour, without paying so many persons for standing between them. This would seem calculated to increase their power to pay for protection, should it be needed.

The object of the monopoly system—now known by the name of free trade—is that of separating the consumer from the producer, and diminishing their power to protect each other. Their exchanges are to be always made in distant markets, and many wagons, ships, and men are to stand between, for the care of which fleets and armies are needed. This would seem to increase their *necessity* for protection, while the diminished power of combination of action would seem to tend to decrease their *power* of paying for protection.

How stand the facts? The question will be answered by placing side by side the expenditures under the different systems:—

Protection.	Per annum.	Free trade.	Per annum.
1829 to 1834 .	$16,800,000	1834 to 1841 .	$31,700,000
1843 to 1845 .	20,700,000	1846 to 1849 .	44,500,000

The necessity for contributing towards the support of government seems to have increased with the approach towards free trade, and to have diminished as we approached protection.

The revenue from customs in the several periods, was as follows:—

	Per head.		Per head.
1830 to 1834 . .	$1·75	1835 to 1841 . .	0·84½
1843 to 1847 . .	1·36	1848–49 . . .	1·—

I exclude here the year 1847–48, because it was an entirely exceptional one. We had imported a large amount of free goods—specie—in the preceding year, and we exported it again in 1847–48, to exchange for duty-

paying ones, and the whole amount of duty received upon the goods so obtained in exchange, should be added to the revenue of 1846–47.

The power to *contribute* towards the revenue certainly decreased in the years of free trade, and precisely as the *necessity* for contributions increased. The amount actually paid was greater than is here set down, because the government collected, between 1834 and 1841, a large amount of duties upon goods received in exchange for certificates of debt; but that was merely a payment in advance of production, and the consequence of receiving such payment was, that it was nearly bankrupt in 1842, and compelled to borrow almost thirty millions to provide for the continuance of its own existence.

We are now doing the same thing. The amount of debt incurred in the last year was not less than twenty-two millions, and upon this the government obtained duties, as before, *in advance of production*, to the extent of almost seven millions. If the power to buy on credit were now to cease, the amount collected would fall to twenty-two millions. Were the debt contracted last year now to be paid, it would fall to fifteen millions, and a large addition would have to be made to the public debt, as in 1841–42. How long a time is to elapse before such will be the state of things, it is not for me to predict; but if we make this year a further addition of twenty millions to our foreign debt, and close as many furnaces as we did in the last one, the day for it cannot be far distant.

The power to contribute towards the maintenance of government depends upon the power of production, and every circumstance tending to diminish the one tends equally to the diminution of the other. The power of production is now rapidly diminishing, and must continue so to do.

Such likewise is the case in England. From year to year the payment of taxes is becoming more and more onerous, notwithstanding so large a portion of them is thrown upon the farmers and planters of the earth, by aid of the system under which they are compelled to give more food, cotton, tobacco, and sugar, for less and less cloth and iron; and yet from year to year the expenditures have been increasing. Poverty produced rebellion in Ireland, and chartism in England, and thus increased the necessity for soldiers and sailors. The exhaustion of the older provinces of India led to a desire for Affghanistan, Scinde, and the Punjaub; and the failure of a market for labour in the form of cotton, drove the Hindoo to opium, which led to a war in China, and thus was made a demand for fleets and armies. The poverty of Canada led to rebellion, and to the building of forts and ships. The anxiety to secure foreign markets has led to immense expenses for steamships and mail steamers, and thus the more the system tends to fail, the greater is the expenditure for its maintenance, and the less the ability of the people of England, and the farmers and planters of the world, to contribute thereto.

Let us now look to the other source of our national revenue—the PUBLIC lands.

The higher the value of labour, the more of it will be brought here for sale. The more people come here, the more land will be required. The larger and more valuable the freights homeward, the less will be the cost of freight outward, and the more numerous will be the commodities that can be exported to pay for those we may choose to import.

Were we now importing a million of men annually, the sales of land would soon reach ten millions of acres per annum. That point we should now reach in five years of perfect and fixed protection, and but few more years would be required to double both the importation of men and the sales of public lands. Here is a vast source of public revenue.

Perfect protection would, by degrees, diminish the import of cottons, iron,

and other duty-paying goods, but we should consume treble or quadruple the quantity of coffee, tea, and the raw materials for the production of which the soil or climate of the country is not suited, and thus should we raise the value of labour employed in agriculture throughout the world.

It is asked, "If we converted all our cotton into cloth, what would Europe produce to pay us for it?" In answer, it may be said that the object of protection is that of enabling the consumer of food to take his place by the side of the producer of food, not to separate them. It is to our interest that the people of England should supply themselves with clothing made by men who eat the food of England, and that such should be the case with those of Germany and Russia, Spain and Italy, and with every step in their progress they would need more cotton. To pay for it, they would employ their labour in the production of thousands of articles of taste and luxury, of which we should then consume immense quantities, and therewith there would be improvement of taste, refinement of feeling, elevation of character, and increase of individual and national strength, of which now we can form no conception.

Upon such commodities the duties would be moderate, and, as the imports of the more bulky of the duty-paying articles diminished, the customs' revenue would gradually decline, until at length the *necessity* for custom-houses would pass away, the *power* to maintain government with the land revenue having grown to take its place, and thus might be realized the wonderful idea of the government of an immense nation maintained without the necessity for a single man employed in the collection of taxes.

It would thus appear that between the interests of the treasury and the people, the farmer, planter, manufacturer, and merchant, the great and little trader and the shipowner, the slave and his master, the landowners and labourers of the Union and the world, the free trader and the advocate of protection, there is perfect harmony of interests, and that the way to the establishment of universal peace and universal free trade, is to be found in the adoption of measures tending to the destruction of *the monopoly of machinery*, and the location of the loom and the anvil in the vicinity of the plough and the harrow.

CHAPTER TWENTY-SIXTH.

HOW PROTECTION AFFECTS THE GOVERNMENT.

THE man whose labour is productive, and whose habits are economical, enjoys the confidence of the world; while he whose labour is unproductive, and whose habits are wasteful, is looked upon with distrust. With the one, each day is marked by an increase of strength; while with the other it is marked by an increase of weakness.

So is it with communities. The peaceful and industrious grow rich and strong. The warlike and wasteful become poor and weak.

If protection be "a war upon the labour and capital of the world," it must tend to cause diminution of wealth and strength, and the *monopoly system* of England must tend to the augmentation of both.

At no anterior period had the wealth and strength of this country grown with the rapidity with which it grew from 1830 to 1835. The nation was at peace and all were employed. At no period has decline been so obvious, or the descent more complete than in the period which followed. The nation was at war, and production declined until in many departments of industry it almost ceased. The name of America became almost a by-word for weakness and want of faith. In the four succeeding years, the recovery was such as to be almost marvellous, and then it was that the power of the nation first began to be admitted. That period has been followed by one of war and waste,

and largely increased expenditure, rendering necessary the collection of large revenues, while production is diminishing. The people and the government are now living on borrowed money, and how long they can continue to borrow is uncertain. The revenue from customs in the year ending in June last was $28,436,000
Of which there was collected on goods purchased with certificates of debt 6,600,000

To meet the demands of the government for the present year, the whole sum of $28,000,000 would be required, and, if we should cease to be able to purchase merchandise on credit, the government would be driven again to the raising of money by means of loans, and if at the same time the debts now being created were sent back upon us for payment, the present year might witness a repetition of the troubles of 1841 and 1842.

During the existence of the tariff of 1842, the government paid its way, and therefore it was strong. It is now carried on on credit, and therefore it is becoming weak. To the extent of the foreign debt created, the country has eaten and drunk and used that for which it has yet to pay, and the government has had its thirty per cent.; but a demand for payment would at once reduce the imports as much below the exports as they now exceed them, and the government would find its revenue decreased to the full extent of the present excess.

The contrast presented, on a review of the history of Great Britain and this country, is most instructive. Sixty years since, the former was rich and populous, while the latter was poor and its population was small and widely scattered. In wealth, the Union already exceeds her competitor, and in population it will do so at the close of the next decennial period.

The reason of this is to be found in the fact, that the policy of the one has tended to the separation of the consumer from the producer, while that of the other has, to some extent, tended towards bringing them together. The English system is based upon "ships, colonies, and commerce," and, in carrying it out, her colonies have been in succession exhausted. Ireland now lies prostrate and helpless—a burden upon her hands—an encumbrance rather than an advantage. Poverty and distress are coming gradually nearer and nearer home, while she is encumbered with an enormous debt, no part of which can she pay, and the interest upon which is yet paid only by aid of a series of repudiations quite as discreditable as those with which she is accustomed to charge upon Mississippi and Florida.*

The American system is based upon agriculture, the work of production, and its object has been that of producing prosperous agriculture, by bringing the consumer to take his place by the side of the producer, and thus establishing that great commerce which is performed without the aid of ships or wagons. By aid of that system the original thirteen States have planted numerous colonies, all of which have grown and thriven, giving and receiving strength, while those of England, so long the subjects of immense taxation, are now everywhere a cause of weakness. All desire to abandon her, while all would desire to unite with us, and were they at liberty to exercise their

* The great expansion of the Bank of England in 1839, was followed by the destruction of confidence among individuals to so great an extent that the three per cents went up to par, and the government availed itself of the opportunity to compel the holders of the four and a half per cents to take in exchange new certificates, bearing three and a half per cent. Shortly after the threes fell to eighty. The last expansion has brought about a similar state of things. Confidence is destroyed, and trade is paralyzed, and the threes are again almost at par; and it is now suggested that a new arrangement may be made by which the government may be enabled to repudiate a further portion of the interest on the debt.

inclinations, the sway of the Queen of Great Britain would, probably, at the close of the present year, be limited to that island alone, with its twenty or twenty-two millions of inhabitants.

The *free trade* of England consists in the maintenance of *monopoly*, and therefore is it repulsive. The protective system of this country looks to the breaking down of monopoly, and the establishment of *perfect free trade*, and therefore is it attractive.

The one looks to "cheap" labour, and therefore does it expel individuals as well as communities. The other looks to raising the value of labour, and therefore does it attract both individuals and communities.

Protection tends to the maintenance of peace, and the increase of wealth and power. The colonial system tends to the production of causes of war, and the diminution and ultimate destruction of both wealth and power.

Between the views of those who would desire to see their government strong for defending them in the enjoyment of all their rights in relation to the other communities of the world, and those of others who desire to see the government peacefully and economically administered, there is therefore perfect harmony.

CHAPTER TWENTY-SEVENTH.

HOW PROTECTION AFFECTS THE NATION.

THE man whose labour is productive, exercises the power of self-government, which increases with every increase in the productiveness of his labour. With every diminution in his power of production, he loses more and more the power of self-government, and ultimately becomes a slave.*

So is it with nations. With every increase in the productiveness of their labour, they are more enabled to determine for themselves their own course of action, uninfluenced by that of surrounding nations. With every diminution therein, they are more and more compelled to shape their course of action by that of others, losing the power of self-government.

With the diminished *necessity* for combination with their neighbours, there is an increased *power* for voluntary combination, (annexation,) tending still further to increase the return to labour. With increased *necessity* for combination, there is diminished *power* for voluntary combination, with diminished return to labour.

If protection be "a war upon labour and capital," it must diminish the power of voluntary union, and increase the necessity for uniting our efforts with those of distant nations. If the English monopoly system tend to increase the value of labour and capital, it must tend to increase the power of voluntary union, and diminish the necessity for involuntary union.

Of all the nations of the world, there is, at the present time, not one that exercises in a less degree the power of self-government than that of Great Britain. For the last thirty years, her policy has been dictated by others. The repeal of the laws prohibiting the export of machinery was a matter of necessity, and so have been, in succession, all the laws relative to duties on imports. The duty on cotton was abolished because other nations had obtained machinery. Slave-grown cotton was admitted duty free, while slave-grown sugar was subjected to heavy duties, because a supply of cotton was

* "The transition from absolute freedom to a state of slavery is now in progress among the Arabs of Mesopotamia, owing to diminished power of obtaining the means of subsistence by the modes heretofore pursued. The poor and the weak are enslaved by those who are stronger and more wealthy."—*Spectator, March*, 1840.

matter of necessity. The restrictions on slave-grown sugar were abandoned, because the abandonment was necessary. The navigation laws have, step by step, been abandoned, as matter of necessity. The corn laws were repealed because it was deemed necessary to conciliate the growers of corn into becoming large purchasers of cloth and iron. With each step in her progress, pauperism and crime increase, and the necessity for places of banishment for criminals increases, and with each there is increased difficulty in finding places willing to receive them. Having exhausted Van Diemen's land,* and Norfolk Island, the Cape was recently selected for the purpose, but the colonists have set an example of successful resistance that will be elsewhere followed. Canada is now to be set free, and Ireland is to be retained, neither of them of choice, but both as matters of necessity. The nation has lost the power of self-government. Its policy is being dictated to it by the other nations of the world. The tendency to voluntary union has ceased to exist, and each day brings with it new evidence that the dissolution of the British empire is at hand.

If such is the case with the owners of the loom and the anvil, how is it with their subjects who hold the plough and follow the harrow? Ireland has no power of self-government. She is a mere machine in the hands of those who perform the duties of government. Poor-laws are inflicted upon her to such an extent as almost to amount to a confiscation of property, and then other laws are passed to authorize commissioners to take possession of, and sell, a large portion of the property of the kingdom, thus encumbered.

The West Indies were gradually exhausted under the system, and their people despoiled of their property by virtue of laws passed by men who paid no portion of the enormous loss thus inflicted upon their fellow-subjects. The people of Canada have had new systems inflicted upon them with a view to the maintenance of peace, but peace there is none. All desire to obtain the right of self-government, the first step in which will be resistance to the monopoly system.

Of all the colonies of England, the only one that has prospered is this Union, and it has so done, because it has, in a certain degree, exercised the power of self-government, manifested by a determination to bring the loom and the anvil to take their natural places by the side of the plough and the harrow. Hence it is that every colony of Great Britain, Ireland included, desires annexation to us and separation from her. The tendency to voluntary union exists in a degree exceeding any thing that the world has yet seen. Nevertheless, we are yet but little more than a colony. Our people have no control over their own actions. They are almost as dependent upon the will of those who now desire, though vainly, to guide the movements of England, as are those of Canada.

If the people of that country determine to make railroads, iron rises in price, and we build furnaces and open coal mines, and import people to make iron and mine coal. If they cease to make roads, we shut up our furnaces

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* "Thither nearly the whole convict population of Great Britain and Ireland, about 3500 annually in number, were sent for several years. * * The consequence was, that ere long *three-fifths* of the inhabitants of the colony were convicts. * * The morals of the settlement, thus having a majority of convicts, were essentially injured. Crimes unutterable were committed; the hideous inequality of the sexes induced its usual and frightful disorders; the police, how severe and vigilant soever, became unable to coerce the rapidly increasing multitude of criminals; the most daring fled to the woods, where they became bush-rangers; life became insecure, and property sank to half its former value."—*Blackwood's Magazine, November*, 1819. "At present, there are, or at least should be, above 5000 criminals annually transported from the British Islands."—*Ibid.*

and mines, and then the iron men and the coal men have to endeavour to raise food. If they ask a high price for cloth, we build mills. If employment become scarce with them, and their people cease to consume cloth, we close our mills, and our operatives are condemned to idleness. If the Bank of England make money cheap, we buy iron and cloth on credit; if it make it dear, we are called upon for payment, and then we break. If employment for capital be denied at home, our houses and lands rise in price; if capital become scarce, our houses and lands fall in value. If we build mills and furnaces, our people stay at home; if we close them, they scatter abroad. If money be cheap in England, our government obtains a large revenue from duties on the goods that are bought on credit; if it be dear, the revenue falls off, and the government begs for loans in Europe. The value of every thing, and the movement of every thing, in this country, are settled by the movement of the Bank of England, of all the large institutions of the world the one in the government of which there is manifested the least capacity; and the one, consequently, that possesses in the smallest degree the power of self-government. Four times in thirty years has it been on the verge of bankruptcy, and yet to its car and that of the government of England, now floundering in a sea of troubles, is this Union attached by aid of the system now known by the name of free trade.

For thus relinquishing the power of self-government, there should be a large consideration; yet all that we receive from Europe in return for all we send her is fifty cents' worth of iron, half a pound of wool, as much flax, an ounce or two of silk, a cup and saucer, and the weaving and twisting of a pound and a half of cotton, per head, all of which could be produced or performed here by fewer people than have come here in a single year, when we have made a market for their labour. Half a million of people would produce treble the flax, the wool, the silk, and the iron, the china-ware, and spin and weave treble the quantity of silk, wool, flax, and cotton, that we receive from Europe in return for all the land and labour employed in producing the cotton, tobacco, rice, grain, butter, cheese, pork, and other commodities that we send to that quarter of the world; and that half million would consume almost as much cotton as is now consumed by all the people of Ireland, besides being customers to the farmer for fifty millions of dollars' worth of food, timber, and other of the products of the soil. We thus relinquish the power of self-government, not only without receiving an equivalent, but we give our property without an equivalent, and therefore it is that the farmers and planters of the Union remain poor when they might become rich.

Rich they would grow, for the people thus imported would require a vast amount of shipping, and cotton, rice, and tobacco would go cheaply abroad, while a vast consumption at home would maintain the price, and both farmer and planter would be enabled to consume more largely of coffee, tea, silks, books, pictures, gold, silver, and all other articles of necessity or luxury not produced at home, and the producers of those commodities would consume more cloth and iron, both of which we should then produce so cheaply that we could send them abroad, and thus would come wealth and prosperity, happiness and independence.

To the consciousness of the necessity for protection against the monopoly system was due the state of feeling that led to the Revolution. Resistance to oppression led, on various occasions, to non-importation resolutions, and the people were everywhere urged to endeavour to clothe themselves. The necessity for protection was recognised by the early Congresses, and its importance urged upon them by every administration.

Fifty years since, power changed hands; but with the accession of Mr.

Jefferson came no change of policy. He thought "the manufacturer should take his place by the side of the agriculturist." From that time, for a period of thirty-six years, every chief magistrate, *elected by the people*, was from the planting States of the Union, and all of them elected by the same party that elected Mr. Jefferson, and each and every one of them was an advocate of the system which tended to bring the loom to the neighbourhood of the plough, and thus to make a market on the land for the products of the land. By the last of these, his views on this subject were forcibly expressed in a letter that has frequently been published, and from which the following is an extract:

"I will ask, what is the real situation of the agriculturist? Where has the American farmer a market for his surplus produce? Except for cotton, he has neither a foreign nor home market. Does not this clearly prove, when there is no market either at home or abroad, that there is too much labour employed in agriculture, and that the *channels for labour should be multiplied?* Common sense points out at once the remedy; draw from agriculture this superabundant labour, employ it in mechanism and manufactures, thereby creating a home market for your breadstuffs, and distributing labour to the most profitable account, and benefits to the country will result. Take from agriculture in the United States six hundred thousand men, women, and children, and you will at once give a home market for more breadstuffs than all Europe now furnishes us. In short, sir, we have been too long subject to the policy of British merchants. It is true that we should become a little more Americanized, and, instead of feeding the paupers and labourers of England, [as we do by sending there for her manufactures,] feed our own; or else, in a short time, by continuing our present [free trade] policy, we shall all be rendered paupers ourselves."—*President Jackson.*

At the close of that period there was a change of policy. Elected by the same party that had elected his predecessor, Mr. Van Buren adopted the policy which tends to the separation of the consumer from the producer, to the impoverishment of the land and its owner, and the maintenance of the monopoly system by which England had acquired the control of the movements of the world. The effects were disastrous, as may be seen by all who study the diagrams given in the third chapter, and the consequence was a political revolution. For the first time in forty years, a president was elected by the people not being of the party generally known as that of the Democrats. Democracy had changed sides, and the people did not go with it. The consequence of this was, nearly two years later, a return to the policy of protection and a restoration of prosperity, and with prosperity the party that had so long controlled the movements of the country was again restored to power. Unwilling, however, to acknowledge that the revolution of 1840 had been the consequence of an error of policy, they ascribed it to various minor and insignificant causes, and proceeded to the enaction of the tariff of 1846, and the consequence was another revolution by which the party of protection was again restored to power. Like the former, that revolution is now ascribed to minor causes; but those who will study the diagrams to which I have above referred can scarcely fail to see that it was due to the fact that the party styled Democratic had espoused a course of policy that tended to diminish the value of labour, to degrade the labourer, to depress the democracy at home, and to maintain the aristocracy abroad; nor can they, as I think, fail to arrive at the belief that no party adverse to protection can again hold power in this country. Such being the case, the interest of both parties, if actuated solely by purely selfish considerations, would lead to the advocacy of the same course of policy—the one in power desiring that it might not be adopted, and that thus they might profit by the agitation of the question for maintaining themselves in authority, and the one out of power, that it might be settled, and the agitation of the question brought to a close.

CONCLUSION.

MUCH is said of "the mission" of the people of these United States, and most of it is said by persons who appear to limit themselves to the consideration of the *powers* of the nation, and rarely to think of its *duties*. By such men the grandeur of the national position is held to be greatly increased by having expended sixty or eighty millions upon a war with a weak neighbour, and having thus acquired the power to purchase, at a high price, a vast body of wild land that would, in the natural course of events, have been brought within the Union, in reasonable time, without the cost of a dollar or a life. By such men, the fitting out of expeditions for the purpose of producing civil war among our neighbours of Cuba, is held to be another evidence of grandeur. Others would have us to mix ourselves up with all the revolutionists of Europe; while a fourth and last set sigh at the reflection that our fleets and armies are too small for the magnificence of our position.

By some it is supposed that our "mission" is that of monopolizing the commerce of the world, and the time is anxiously looked for when we shall have "diplomatic relations" with "vast regions of the East," Persia, Corea, Cochin-China, Burmah and Japan, with whom "nothing but the steam-ship can successfully introduce our commerce." By "persevering and successful efforts," it is thought we may secure the "commerce of Japan." That done,

"New York," it is thought, "would become the depôt and storehouse and entrepots of the world, the centre of business and exchanges, the clearing house of international trade and business, the place where assorted cargoes of our own products and manufactures, as well as those of all foreign countries, would be sold and reshipped, and the point to which specie and bullion would flow, as the great creditor city of the world for the adjustment of balances, as the factor of all nations and the point whence this specie would flow into the interior of our country through all the great channels of international trade and intercourse. With these great events accomplished, and with abundant facilities for the warehousing of foreign and domestic goods at New York, it must eventually surpass in wealth, in commerce, and population, any European emporium, whilst, as a necessary consequence, all our other cities and every portion of the Union and all our great interests, would derive corresponding advantages."—*Treasury Report, December*, 1848.

The cost of a mission to Japan would build half a dozen furnaces that would add more to the wealth of the nation in five years than the commerce of that country would do in half a century. The amount we have expended on the mission to Austria, in search of a market for tobacco, would bring here as many Germans as would consume almost as much of our tobacco as is now consumed in the empire, and those tobacco consumers would do more for the growth of New York than either Japan or Austria.

The English doctrine of "ships, colonies, and commerce" is thus reproduced on this side of the Atlantic, and its adoption by the nation would be followed by effects similar to those which have been already described as existing in England. There, for a time, it gave the power to tax the world for the maintenance of fleets and armies, as had before been done by Athens and by Rome, and there it is now producing the same results that have elsewhere resulted from the same system, poverty, depopulation, exhaustion, and weakness.

But little study of our history is required to satisfy the inquirer that the power of the Union, and its magnificent position among the nations of the earth, are due to the fact that we have to so great an extent abstained from measures requiring the maintenance of fleets and armies. The consequence has been that taxes have been light, capital has accumulated rapidly, labour

has been productive, and the labourer has received wages that have enabled him to feed, clothe, and educate his children, and the nation has thus performed its true "mission" in elevating the condition of man. If we desire to find exceptions to this, we must look to those periods in which the policy of Washington, Jefferson, Madison, Monroe, and Jackson, was departed from, and when the government adopted measures tending to the maintenance of the English monopoly of machinery, and there we shall find taxes more heavy, capital accumulating more slowly, labour more unproductive, and the wages of labour so much depressed that the labourer finds it difficult to feed or clothe his children, and still more difficult to educate them.

Two systems are before the world; the one looks to increasing the proportion of persons and of capital engaged in trade and transportation, and therefore to diminishing the proportion engaged in producing commodities with which to trade, with *necessarily* diminished return to the labour of all; while the other looks to increasing the proportion engaged in the work of production, and diminishing that engaged in trade and transportation, with increased return to all, giving to the labourer good wages, and to the owner of capital good profits. One looks to increasing the quantity of raw materials to be exported, and diminishing the inducements to the import of men, thus impoverishing both farmer and planter by throwing on them the burden of freight; while the other looks to increasing the import of men, and diminishing the export of raw materials, thereby enriching both planter and farmer by relieving them from the payment of freight. One looks to giving the *products* of millions of acres of land and of the labour of millions of men for the *services* of hundreds of thousands of distant men; the other to bringing the distant men to consume on the land the products of the land, exchanging day's labour for day's labour. One looks to compelling the farmers and planters of the Union to continue their contributions for the support of the fleets and the armies, the paupers, the nobles, and the sovereigns of Europe; the other to enabling ourselves to apply the same means to the moral and intellectual improvement of the sovereigns of America.* One looks to the continuance of that *bastard* freedom of trade which denies the principle of protection, yet doles it out as revenue duties; the other to extending the area of *legitimate* free trade by the establishment of perfect protection, followed by the annexation of individuals and communities, and ultimately by the abolition of custom-houses. One looks to exporting men to occupy desert tracts, the sovereignty of which is obtained by aid of diplomacy or war; the other to increasing the value of an immense extent of vacant land by importing men by millions for their occupation. One looks to the *centralization* of wealth and power in a great commercial city that shall rival the great cities of modern times, which have been and are being supported by aid of contributions which have exhausted every nation subjected to them; the other to *concentration*, by aid of which a market shall be made upon the land for the products of the land, and the farmer and planter be enriched. One looks to increasing the necessity for commerce; the other to increasing the power to maintain it. One looks to underworking the Hindoo, and sinking the rest of the world to his level; the other to raising the standard of man throughout the world to our level. One looks to pauperism, ignorance, depopulation, and barbarism; the other to increasing wealth, comfort, intelligence, combination of action, and civilization. One looks towards universal war; the other towards universal peace. One is the English system; the other we

* Russia is now raising by loan five millions of pounds sterling to pay the expenses of the war in Hungary. The farmers and planters of the Union are the chief contributors to this loan.

may be proud to call the American system, for it is the only one ever devised the tendency of which was that of ELEVATING while EQUALIZING the condition of man throughout the world.

SUCH is the true MISSION of the people of these United States. To them has been granted a privilege never before granted to man, that of the exercise of the right of perfect self-government; but, as rights and duties are inseparable, with the grant of the former came the obligation to perform the latter. Happily their performance is pleasant and profitable, and involves no sacrifice. To raise the value of labour throughout the world, we need only to raise the value of our own. To raise the value of land throughout the world, it is needed only that we adopt measures that shall raise the value of our own. To diffuse intelligence and to promote the cause of morality throughout the world, we are required only to pursue the course that shall diffuse education throughout our own land, and shall enable every man more readily to acquire property, and with it respect for the rights of property. To improve the political condition of man throughout the world, it is needed that we ourselves should remain at peace, avoid taxation for the maintenance of fleets and armies, and become rich and prosperous. To raise the condition of woman throughout the world, it is required of us only that we pursue that course that enables men to remain at home and marry, that they may surround themselves with happy children and grand-children. To substitute true Christianity for the detestable system known as the Malthusian, it is needed that we prove to the world that it is population that makes the food come from the rich soils, and that food tends to increase more rapidly than population, thus vindicating the policy of God to man. Doing these things, the addition to our population by immigration will speedily rise to millions, and with each and every year the desire for that perfect freedom of trade which results from incorporation within the Union, will be seen to spread and to increase in its intensity, leading gradually to the establishment of an empire the most extensive and magnificent the world has yet seen, based upon the principles of maintaining peace itself, and strong enough to insist upon the maintenance of peace by others, yet carried on without the aid of fleets, or armies, or taxes, the sales of public lands alone sufficing to pay the expenses of government.

To establish such an empire—to prove that among the people of the world, whether agriculturists, manufacturers, or merchants, there is perfect harmony of interests, and that the happiness of individuals, as well as the grandeur of nations, is to be promoted by perfect obedience to that greatest of all commands, "Do unto others as ye would that others should do unto you," —is the object and will be the result of that mission. Whether that result shall be speedily attained, or whether it shall be postponed to a distant period, will depend greatly upon the men who are charged with the performance of the duties of government. If their movements be governed by that enlightened self-interest which induces man to seek his happiness in the promotion of that of his fellow-man, it will come soon. If, on the contrary, they be governed by that ignorant selfishness which leads to the belief that individuals, party, or national interests, are to be promoted by measures tending to the deterioration of the condition of others, it will be late.

INSECTS INJURIOUS TO VEGETATION.

REPORT ON THE

INSECTS OF MASSACHUSETTS INJURIOUS TO VEGETATION, BY THADDEUS WM. HARRIS.

On undertaking to conduct a periodical designed to be useful, not only by illustrating practical Agriculture and detailing the result of actual experiments in the field, but by exhorting young farmers to extend the range of their reading and to cultivate a fondness for the study of sciences and literature that bear relation to practical Agriculture, we considered it to be one of our first duties to recommend, in the strongest terms we could employ, the *study of Entomology*, or the character and habits of *Insects*. For motives to prompt the young farmer to this field of investigation, we need go no farther than to the very first sentence in the book before us—a work which we earnestly commend on its own merits, and for the benefit of the agriculturist, and not to serve any interest of either author or publisher.

"The benefits which we derive from insects," says Doctor Harris, "though neither few in number nor inconsiderable in amount, are, if we except those of the silk-worm, the bee and the cochineal, not very obvious, and are wholly beyond our influence. On the contrary, the injuries that we suffer from them are becoming yearly more apparent, and are more or less within our control. Before suitable remedies can be discovered and effectually applied, it is necessary that our insect enemies should be recognized, and their habits generally known."

This account of the insects injurious to vegetation in Massachusetts, which appears to have been prepared under instructions from Governor Everett, is doubtless applicable in a great degree to the whole Union. The very suggestion of such a work showed enlarged and liberal views on the part of a Chief Magistrate of a State, and is enough, in connection with the general knowledge of *his* various and elegant attainments, to warrant the supposition or inquiry whether these instructions themselves would not have formed an interesting preface or appendage to a performance which in our humble opinion seems to have been executed with the judgment and zeal of a disinterested naturalist and accomplished scholar.

As to the general plan of the work, the author observes—

"While I have not thought it expedient to avoid the use of a scientific classification, and have even been at some pains to point out the characters on which this classification is founded, and the peculiarities of the various groups of insects under consideration, it has been my endeavor to treat the subject in a plain and familiar way. No more of the technical language of Entomology has been introduced, than was absolutely necessary to define and discriminate the different insects, whose transformations are described, and in most cases the scientific names and terms have been explained whenever they occurred."

The following passages are all for which we can find room; but these are full of instruction for those who have not turned their attention to this interesting branch of Natural History, and will of themselves awaken the young reader to some sense of the vast field which displays itself for his amusement and instruction—one for which he has no distance to travel, for it is open to him on every side, with objects innumerable to occupy in the most agreeable manner many moments of leisure for which the uninstructed can find no employment, and hence are liable every day to be overcome with listless ennui.

> "The primrose by the river's brim
> A simple primrose is to him,
> And it is nothing more."

As this Report is designed for the use of persons who may not have elementary and other works on this branch of Natural History at their command, it may be proper to begin with some brief remarks on insects in general, in order to show how they are formed, and wherein they differ essentially from other animals.

The word *Insect*,* which, in the Latin language, whence it was derived, means cut into or notched, was designed to express one of the chief characters of this group of animals, whose body is marked by several cross-lines or incisions. The parts between these cross-lines are called segments or rings, and consist of a number of jointed pieces, more or less movable on each other.

Insects have a very small brain, and, instead of a spinal marrow, a kind of knotted cord, extending from the brain to the hinder extremity; and numerous small, whitish threads, which are the nerves, spread from the brain and knots, in various directions. Two long air-pipes, within their bodies, together with an immense number of smaller pipes, supply the want of lungs, and carry the air to every part. Insects do not breathe through their mouths, but through little holes, called spiracles, generally nine in num-

* *Insectum* is an abbreviation of *intersectum*; and from the same source we have the word intersect, to cut or divide.

ber, along each side of the body. Some, however, have the breathing-holes placed in the hinder extremity, and a few young water-insects breathe by means of gills. The heart is a long tube, lying under the skin of the back, having little holes on each side for the admission of the juices of the body, which are prevented from escaping again by valves or clappers, formed to close the holes within. Moreover, this tubular heart is divided into several chambers, by transverse partitions, in each of which there is a hole shut by a valve, which allows the blood to flow only from the hinder to the fore part of the heart, and prevents it from passing in the contrary direction. The blood, which is a colorless or yellowish fluid, does not circulate in proper arteries and veins; but is driven from the fore part of the heart into the head, and thence escapes into the body, where it is mingled with the nutritive juices that filter through the sides of the intestines, and the mingled fluid penetrates the crevices among the flesh and other internal parts, flowing along the sides of the air-pipes, whereby it receives from the air that influence which renders it fitted to nourish the frame, and maintain life.

All insects are produced from eggs, and none are spontaneously generated from putrid animal or vegetable matter. A few insects, such as some plant-lice, do not lay their eggs, but retain them within their bodies till the young are ready to escape. Other insects invariably lay their eggs where their young, as soon as they are hatched, will find a plentiful supply of food immediately within their reach.

Most insects, in the course of their lives, are subject to very great changes of form, attended by equally remarkable changes in their habits and propensities. These changes, transformations, or *metamorphoses*, as they are called, might cause the same insect, at different ages, to be mistaken for as many different animals. For example, a caterpillar, after feeding upon leaves till it is fully grown, retires into some place of concealment, casts off its caterpillar skin, and presents itself in an entirely different form, one wherein it has neither the power of moving about, nor of taking food; in fact, in this, its second or chrysalis state, the insect seems to be a lifeless, oblong, oval or conical body, without a distinct head, or movable limbs; after resting a while, an inward struggle begins, the chrysalis skin bursts open, and from the rent issues a butterfly, or a moth, whose small, flabby wings soon extend and harden, and become fitted to bear away the insect in search of the honeyed juice of flowers and other liquids that suffice for its nourishment.

The little fish-like animals that swim about in vessels of stagnant water, and devour the living atoms that swarm in the same situations, soon come to maturity, cast their skins, and take another form, wherein they remain rolled up like a ball, and either float at the surface of the water, for the purpose of breathing through the two tunnel-shaped tubes on the top of their backs, or, if disturbed, suddenly uncurl their bodies, and whirl over and over from one side of the vessel to the other. In the course of a few days these little water-tumblers are ready for another transformation; the skin splits on the back between the breathing-tubes, the head, body, and limbs of a musketo suddenly burst from the opening, the slender legs rest on the empty skin till the latter fills with water and sinks, when the insect abandons its native element, spreads its tiny wings, and flies away, piping its war-note, and thirsting for the blood which its unlucky victims.

The full-fed maggot, that has rioted in filth till its tender skin seems ready to burst with repletion, when the appointed time arrives, leaves the offensive matters it was ordained to assist in removing, and gets into some convenient hole or crevice: then its body contracts or shortens, and becomes egg-shaped, while the skin hardens, and turns brown and dry, so that, under this form, the creature appears more like a seed than a living animal; after some time passed in this inactive and equivocal form, during which wonderful changes have taken place within the seed-like shell, one end of the shell is forced off, and from the inside comes forth a buzzing fly, that drops its former filthy habits with its cast-off dress, and now with a more refined taste, seeks only to lap the solid viands of our tables, or sip the liquid contents of our cups.

Caterpillars, grubs, and maggots undergo a complete transformation in coming to maturity; but there are other insects, such as crickets, grasshoppers, bugs, and plant-lice, which, though differing a good deal in the young and adult states, are not subject to so great a change, their transformations being only partial. For instance, the young grasshopper comes from the egg a wingless insect, and consequently unable to move from place to place, in any other way than by the use of its legs; as it grows larger it is soon obliged to cast off its skin, and, after one or two moultings, its body not only increases in size, but becomes proportionally longer than before, while little stump-like wings begin to make their appearance on the top of the back. After this, the grasshopper continues to eat voraciously, grows larger and larger, and hops about without any aid from its short and motionless wings, repeatedly casts off its outgrown skin, appearing each time with still longer wings, and more perfectly formed limbs, till at length it ceases to grow, and, shedding its skin for the last time, it comes forth a perfectly formed and matured grasshopper, with the power of spreading its ample wings, and of using them in flight.

Hence there are three periods in the life of an insect, more or less distinctly marked by corresponding changes in the form, powers and habits. In the first, or period of infancy, an insect is technically called a *larva*, a word signifying a mask, because therein its future form is more or less masked or concealed. This name is not only applied to grubs, caterpillars, and maggots, and to other insects that undergo a complete transformation, but also to young and wingless grasshoppers, and bugs, and indeed to all young insects before the wings begin to appear. In this first period, which is generally much the longest, insects are always wingless, pass most of their time in eating, grow rapidly, and usually cast off their skins repeatedly. The second period, wherein those insects that undergo a partial transformation, retain their activity and their appetites for food, continue to grow, and acquire the rudiments of wings, while others at this age, entirely lose their larva form, take no food, and remain at rest in a death-like sleep—is called the *pupa* state, from a slight resemblance that some of the latter present to an infant trussed in bandages, as was the fashion among the Romans. The pupæ from caterpillars, however, are more commonly called chrysalids, because some of them

as the name implies, are gilt or adorned with golden spots; and grubs, after their first transformation, are often named nymphs, for what reason does not appear. At the end of the second period insects again shed their skins, and come forth fully grown, and (with few exceptions) provided with wings. They thus enter upon their last or adult state, wherein they no longer increase in size, and during which they provide for a continuation of their kind. This period usually lasts only a short time, for most insects die immediately after their eggs are laid. Bees, wasps, and ants, however, which live in society, and labor together for the common good of their communities, continue much longer in the adult state.

In winged or adult insects, two of the transverse incisions, with which they are marked, are deeper than the rest, so that the body seems to consist of three principal portions, the first whereof is the head, the second or middle portion of the thorax, or chest, and the third or hindmost the abdomen, or hind-body. In some wingless insects these three portions are also to be seen; but in most young insects, or larvæ, the body consists of the head, and a series of twelve rings of segments, the thorax not being distinctly separated from the hinder part of the body, as may be perceived in caterpillars, grubs, and maggots.

The eyes of adult insects, though apparently two in number, are compound, each consisting of a great number of single eyes closely united together, and incapable of being rolled in their sockets. Such also are the eyes of the larvæ, and of the active pupæ of those insects that undergo an imperfect transformation. Moreover, many winged insects have one, two, or three little single eyes, placed near each other on the crown of the head, and called *ocelli*, or eyelets. The eyes of grubs, caterpillars, and of other completely transforming larvæ, are not compounded, but consist of five or six eyelets clustered together, without touching, on each side of the head; some, however, such as maggots, are totally blind. Near to the eyes are two jointed members, named *antennæ*, corresponding, for the most part, in situation, with the ears of other animals, and supposed to be connected with the sense of hearing, of touch, or of both united. The antennæ are very short in larvæ, and of various sizes and forms in other insects.

The mouth of some insects is made for biting, that of others for taking food only by suction. In biting insects the parts of the mouth, which are variously modified to suit the nature of the food, are these: an upper and an under lip, two nippers or jaws on each side, moving sidewise, and not up and down, and four or six little jointed members, called *palpi* or feelers, whereof two belong to the lower lip, and one or two to each of the lower jaws. The mouth of sucking insects consists essentially of these same parts, but so different in their shape and in the purposes for which they are designed, that the resemblance between them and those of biting insects is not easily recognized. Thus the jaws of caterpillars are transformed to a spiral sucking-tube in butterflies and moths, and those of maggots to a hard proboscis, fitted for piercing, as in the musketo and horse-fly, or to one of softer consistence, and ending with fleshy lips for lapping, as in common flies; while in bugs, plant-lice, and some other insects resembling them, the parts of the mouth undergo no essential change from infancy to the adult state, but are formed into a long, hard, and jointed beak, bent under the breast when not in use, and designed only for making punctures and drawing in liquid nourishment.

The parts belonging to the thorax are the wings and the legs. The former are two or four in number, and vary greatly in form and consistence, in the situation of the wing-bones or veins, as they are generally called, and in their position or the manner in which they are closed or folded when at rest. The under-side of the thorax is the breast, and to this are fixed the legs, which are six in number in adult insects, and in the larvæ and pupæ of those that are subject only to a partial transformation. The parts of the legs are the hip-joint, by which the leg is fastened to the body, the thigh, the shank (*tibia*), and the foot, the latter consisting sometimes of one joint only, more often of two three, four or five pieces (*tarsi*), connected end to end, like the joints of the finger, and armed at the extremity with one or two claws. Of the larvæ that undergo a complete transformation, maggots and some others are destitute of legs; many grubs have six, namely a pair beneath the under-side of the first three segments, and sometimes an additional fleshy prop-leg under the hindmost extremity; caterpillars and false caterpillars have, besides the six true legs attached to the first three rings, several fleshy prop-like legs, amounting sometimes to ten or sixteen in number, placed in pairs beneath the other segments.

The abdomen or hindmost, and, as to size, the principal part of the body, contains the organs of digestion, and other internal parts, and to it also belong the piercer and the sting with which many winged or adult insects are provided. The piercer is sometimes only a flexible or a jointed tube, capable of being thrust out of the end of the body, and is used for conducting the eggs into the crevices or holes where they are to be laid. In some other insects it consists of a kind of scabbard, containing a central borer, or instruments like saws, designed for making holes wherein the eggs are to be inserted. The sting, in like manner, consists of a sheath enclosing a sharp instrument for inflicting wounds, connected wherewith in the inside of the body is a bag of venom or poison. The parts belonging to the abdomen of larvæ are various, but are mostly designed to aid them in their motions, or to provide for their respiration.

An English entomologist has stated, that, on an average, there are six distinct insects to one plant. This proportion is probably too great for our country, where vast tracts are covered with forests, and the other original vegetable races still hold possession of the soil. There are above 1200 flowering plants in Massachusetts, and it will be within bounds to estimate the species of insects at 4800, or in the proportion of four to one plant. To facilitate the study of such an immense number, some kind of classification is necessary; it will be useful to adopt one, even in describing the few species now before us. The basis of this classification is founded upon the structure of the mouth, in the adult state, the number and nature of the wings, and the transformations. The first great divisions are called orders, of which the following seven are very generally adopted by naturalists.

It appears to us that every intelligent farmer would find the above-named Report a valuable acquisition to his library. On no subject con-

nected with Agriculture is there so little accurate knowledge diffused among the mass of farmers. An acquaintance with Doctor Harris's book will save them much anxiety and many fruitless efforts, besides serving to beget and to gratify a taste for researches that will impress him with the truth of the remark by another modern and most able foreign writer on the same subject, that, "Whatever many may say of Nature growing old, the naturalist finds her always young and beautiful, always estimable—just as she came from the hand of her Creator, and as she indeed every moment issues afresh from the hand of the Almighty Being. In his hand the youth of Nature is continually renewed; and under his all-ruling Providence, all the millions of apparently distinctive beings only labor in preserving her existence and embellishment." This able Report appears to have been published agreeably to an order of the Legislature of Massachusetts, by the Commissioners of the Zoological and Botanical Survey of the State, and is, we believe, 'out of print.'

FRUIT-TREE BORDERS.

[From the London Gardener's Chronicle, 27th Dec. 1845.]

Nothing can be of greater importance to a country gentleman than a flourishing and productive garden; and if proper means are allowed, there can be no reason why this should not be the case. True, there are adverse situations and soils, opposed in some degree to the quality of their productions; but gardening is an art, and he who aspires at a masterly knowledge of that art, by dexterity and perseverance renders every opposing object subservient to his skill. A thorough and enthusiastic cultivator of the soil reduces its obstinacy, corrects its barrenness, and causes the bark-bound, stunted trees to assume a living and vigorous appearance. It may be assumed that these are hidden and abstruse matters, which belong exclusively to science, but we deny it; good gardeners know all this, and bad ones should set about learning without delay. Let such begin by casting off their prejudices; let them take their stand by the side of the inquiring and industrious, and their course and success are alike clear.

All Fruit-Trees, of whatever kind, should be planted on shallow ground, more especially if the quality of the soil is adhesive. As a first principle, the border should be dry; and, if not naturally so, drainage, complete and efficient, must be introduced. The drainage must, from its depth, entirely prevent the roots from getting beyond it. The soil between the drainage and the atmosphere should be rendered friable by exposure to the elements, and when it partakes of considerable tenacity I would urgently recommend an admixture of stones, flints, brickbats, or any similar material, say to the extent of one-fourth. These will enable the rains to percolate freely through the body of earth in which the roots are. They will also in dry weather hold moisture, and tend greatly to maintain the border in an equable state. The roots under such circumstances will be satisfactorily placed; no water can remain or be held in the soil sufficiently long to prove injurious: the stones intermixed with the soil will allow it freely to pass into the drainage beneath, where preparation must have been made for its passing readily off.

No kind of fruit-bearing tree should ever be planted deep, the proper position of the roots in planting is to stretch them carefully on the surface of the border, then to cover them loosely with soil to the depth of three inches; on this lay a slight covering of decayed leaves, merely to protect them from drying winds until the roots are perfectly established in the soil. The roots are certain to find their way downward, but when they are down they are not so likely to find their way toward the surface.

Fruit-tree borders should never be dug with the spade. The surface may be stirred and kept open with the fork, and then merely for the purpose of loosening the soil. The roots should be encouraged to the surface by the application of dressings of decomposed leaves. Wood-ashes will occasionally prove useful, and so will soot. These encourage the kind of wood likely to prove productive, and the produce is entirely different, both as regards size and quality, from that where heavy dressings of stable manure are applied, particularly when the borders are imperfectly drained, and the soil of considerable adhesiveness. Manure dug into borders thus circumstanced is only increasing the evil. The soil is constantly wet and spongy. The roots are surrounded with unhealthy fluid; the air never penetrates beyond the surface; consequently, rank and barren wood, in large quantities, is annually, and to no useful purpose, produced. The roots should never be allowed, if it can possibly be avoided, to get beyond the reach of atmospheric influences. It is in such a position alone that they can procure and assimilate the kind of aliment indispensable to the fruitfulness of the trees. When the borders are imperfectly drained, the fruit produced is not only small in quantity, but of inferior quality, and not fit for dessert or kitchen use, compared with such as is grown on dry and healthy soil. Where the situation is bad, it should not by bad gardening be made worse; every means should be adopted to modify an evil, of itself of sufficient magnitude. I should hope that nobody would ever think of planting trees in future without a complete examination of the condition of the soil, and particularly the subsoil, in order, if necessary, to apply those remedies which skillful gardening may suggest; and surely there is sufficient skill and talent among us to meet, if brought into the field, all the exigencies of the case.

One who has handled the Spade.

CULTURE OF THE GRAPE.

As public attention at the present time seems to be somewhat enlisted in the culture of the grape, and as its success is pretty well established in the vicinity of Cincinnati, where it is rapidly extending, a brief sketch of the most approved mode of establishing a vineyard may be acceptable to some of your readers.

The first step then, is the preparation of the ground. The sides or tops of limestone hills are generally chosen for the location, where the water runs off readily. South and south-eastern exposures are the best in this climate. Three modes of preparing the ground are usually adopted here. The first consists merely in deep plowing, with a common plow, as for potatoes, and making the surface fine and mellow with the harrow. The second method goes one step farther, and a second furrow is cut in the bottom of the first; in the bottom of the second furrow a subsoil plow is run, which breaks the ground, altogether, to the depth of sixteen or eighteen inches; it is then harrowed and prepared as in the first. The third method is by thoroughly trenching with the spade, to the depth of not less than two feet. If the hill-side is steep, (say at an elevation of twenty or thirty degrees with the horizon,) terraces are also raised from two to four feet in hight, and extending up the hill from twenty to sixty feet each, according to the acclivity of the surface. By this last mode, the top soil is all thrown into the bottom of the trenches, and the subsoil, which is generally clayey, thrown upon the top, and left sufficiently smooth for planting. Where stones are found in the soil, they are thrown out on the surface, as the trenching progresses up the hill, and if in sufficient quantity, are laid up in walls to support the terraces. The terraces are made to run horizontally along the hill side, or nearly so, with an open ditch for a drain at the upper edge of each terrace, and a similar horizontal ditch as often as once in eighty or a hundred feet, where the ground is not terraced. These drains should lead to the lowest point in the vineyard, where a suitable drain should be constructed down the hill to carry off the surplus water in heavy showers, and may be covered like a culvert, or left open. In each case the vines are planted in rows, four feet apart if to be worked with the hoe and spade, and from five to six feet if to be worked with the plow or cultivator, and should always run horizontally with the terraces and drains. The distance between the vines in the row varies from two and a half to four feet, according to the mode of training which is to be adopted.

Cuttings of the vine, with three or four eyes, are sometimes planted, at proper distances, in the vineyard; but the usual practice is, to plant them first in a nursery, in rows, about eighteen inches apart, and from four to six in a row, to strike root; here they are to be well cultivated, and allowed to grow one or two years, when they are taken up in the spring and planted out in the vineyard. The fourth year from the cuttings, (that is, after they have had three summers' growth—two in the nursery and one in the vineyard,) they may be allowed to bear a full crop, or nearly as much as they ever should be allowed to bear thereafter; which is about one-fourth of a peck of grapes to each vine. One acre of ground, planted six feet by three apart, will contain about twenty-four hundred vines; consequently will yield about one hundred and fifty bushels of well-assorted grapes, which will make three hundred gallons of wine—sometimes a little more. An acre of good ground, well trenched, and planted with Catawba vines, after it has acquired six or seven years' growth, may be made to yield a much greater quantity; and some small vineyards below Cincinnati, on the hills of the Ohio river, have produced at the rate of eight hundred gallons per acre; but the vines were planted four feet each way, making twenty-six hundred and forty vines to the acre; but the proprietor admitted that his vines were injured by overbearing, and that his wine was inferior in quality when allowed to produce that quantity.

I give three hundred gallons as the full average quantity of wine made to the acre in the neighborhood of Cincinnati. Of course, much variation will depend upon the manner of establishing a vineyard, and its subsequent treatment.

The comparative merits of the different modes of preparing the ground for a vineyard cannot, as yet, be settled by experience in this part of the country, as the oldest vineyard, I believe, has not been established more than twelve or thirteen years. Vineyards planted at Vevay, in Indiana, by the Swiss, merely on deeply plowed ground, failed in fifteen years. When the ground is plowed eighteen inches deep, it may bear tolerably well for twenty years; but a vineyard planted on ground well trenched two feet deep, and properly drained and cultivated, may be expected to last fifty or one hundred years—perhaps more. The crop, also, is much more certain when the ground is well trenched, not being so liable to suffer from drouths or rainy seasons.

The advantages of deep trenching have become so apparent to those who have had the most experience, that nearly all who can afford it are now preparing their ground in this manner, although done at an expense varying from eighty to one hundred and twenty-five dollars per acre, according to the character of the ground. This, with the addition of twenty-four hundred vines, at sixty dollars per thousand for one-year old vines, (the customary price in this market,) with the cost of planting, will make the expense of one acre, exclusive of land, stakes, &c. at least three hundred dollars, or, without trenching, about two hundred.

S. MOSHER.

THE GENUINE ARABIAN HORSE.

"Oh, give me back my Arab steed."

THERE are romantic associations with the very mention of the Arabian horse, in the mind of every lover of that noble animal. No animal has been described by writers with a freer play of the imagination. We recollect to have heard the celebrated Captain Riley portraying the figure and powers of one he saw in Arabia. In passing, he said, through a thicket, where the road was winding, the noble animal disdained to pursue its tedious serpentine course, but instead of that, took a straight direction and *trotted over bushes* four feet high without touching them. But the Captain had a marvellous control over facts.

An interesting article might be made by a recital of the remarkable accounts of their action and endurance, some of them doubtless true as well as extraordinary.

One of the most particular and authoritative descriptions is probably the following from the Memoirs of Sir James Campbell:

The route of the caravan lay at first through the Great Desert of Syria, and then through the country of Hamah, the most celebrated in the world for its breed of horses; and this was a circumstance peculiarly agreeable to me, as I was desirous of all things to carry home with me a horse of that unequaled race. The purity of the breed is ascertained and preserved in this country with greater precision and facility, in consequence of the horses and mares, to the number of one hundred and upward, being uniformly held in common property, by a particular family or tribe. The line of succession is preserved with all the care and and all the accuracy perhaps of a Welsh pedigree; and in the genealogical tree of the horse which I ultimately purchased, its descent was professedly traced to the famous black mare of Mahomed, and I had a certificate of the fact, subscribed by five or six sheiks, who have an obvious interest in keeping up the value of their breed of horses by this exactness in their pedigree.

It is on the mares, however, that the chief value is placed, and through them it is that purity of blood is most depended on. The sister of the horse which I brought home with me, was for sale at the time I made the purchase. I examined her with the greatest care, and could not detect a semblance of a fault in any one of her points. Like all the others of the race, she was under fifteen hands high; and the price put upon her by the tribe to which she belonged was 10,000 piasters, equal to £2,500 of our money. The value of the mare is always much greater than that of a horse of equal symmetry, from the idea of her greater influence in preserving the purity of the race. The price I paid for the horse, own brother to this mare, was 800 Venitian sequins, equal to about £400 sterling; and I am inclined to think it was not far out of proportion, according to their ideas, to the price of the other.

While I was yet in the district where these horses are bred, an agent arrived from the King of Prussia, commissioned to make purchases for His Majesty. He agreed with me in admiring the mare, and declared she was the handsomest animal he had ever seen. He was even willing to give the 10,000 piastres for her, but the tribe had come to the resolution of preserving her as a brood mare, and refused that sum when offered. It is to be observed, however, that there are two distinct races in the country, the noble and the common. Among the latter, many beautiful horses are often to be found, but they never possess those qualities in perfection for which the noble race of Arabia is so peculiarly distinguished—fleetness, wind, and bottom.

Here, too, I must observe that the horses brought from Barbary are not to be compared in any good quality with the noble breed of Hamah. Many of the Barbs have radical faults, and some of them are very ugly, goose-rumped, cat-hammed, and narrow-chested. The difference of the breeds was long unknown in this country, but now it is better understood, and a Barb I believe is seldom bred from.

I shall here mention a circumstance on the authority of persons in that country whose good faith and respectability I had no reason to doubt, as illustrating in rather a striking point of view the marked distinction between the different races of this noble animal, which are reared in the same district.

An Arab who had pitched his tent in a solitary spot of the desert, had occasion to

leave his family, with his stock of the common breed of horses and mares, for a single night. On his return to the place in the morning, he found that his family and his whole property had been carried off in the night. He was mounted on a horse of the noble breed, and of the highest qualities, and having a rifle with him, he set out alone in pursuit of the robbers. On coming up with them he found that their numbers were considerable, but he had reason to believe that they were not possessed of fire-arms, which proved to be the fact.

Approaching near enough to bring them within range of his gun, he fired and wounded one or more of them, and waving his hand he dared them to follow him. This they attempted, but found it fruitless. He then returned to the attack, and again succeeded in singling out one or two of them with his rifle. Once more they pursued him with the fleetest of their horses, but to overtake him was impossible. Thus he hung upon their rear, wounding and killing several of them, until he at length compelled them to restore the booty.

The accoutrements of the Arab horsemen are simple in their construction, and well suited to his wants. The saddle is generally large, and always easy to ride on. The straps are made of untanned leather, and are fastened without buckles. A ring is attached to the end of the girth, and another to a corresponding part of the saddle. Through these rings a strap is repeatedly passed, and drawn together with such force as to bring them near to each other, after which, the strap is fastened by twisting the ends round the part thus tightened. The saddle thus fixed is never displaced, and, indeed, seldom taken off, except for the temporary purpose of grooming, when it is again immediately replaced, although there be no intention of riding. Cruppers are seldom used, because they are not necessary to keep the saddle in its place, and because they never carry anything behind it. The shoes are a thin flat piece of iron, with a hole in the middle to keep the foot cool, something in the form of our common bar shoe, but extremely light, and even flexible, so as to yield with the foot when pressed upon a stone. The numerous diseases to which our horses are liable are scarcely known in these countries.

Sometimes, indeed, I have seen a lame horse, but upon inquiry, the cause was generally to be traced to some accident, either in a skirmish, or from riding violently, which they do without hesitation over the roughest ground. Although never a very timorous rider, I have frequently felt somewhat uneasy at the style in which they carried me over a country which the boldest rider in England would hesitate to follow. In going down a declivity not less, perhaps, than forty-five degrees, where stones as large as a table were scattered about in all directions, I was proceeding with some caution to guide my horse over the difficulties of the ground, when an Arab called out to me, and I was induced ever afterward to follow the advice, "Give him his head, he sees the stones as well as you do."

Everybody has seen the Turkish bridle; they never use a curb, but the ring which is put into the mouth serves the same purpose; the bit, which is very light, acting so powerfully, by means of the lever attached to it, as to force the mouth open and keep it so; neither do they ever use the snaffle, or bridoon; I tried it in the hope of its easing the mouth, but to horse and rider it proved equally inconvenient. Although they use such powerful bridles, the Arabs ride with a heavy hand, so as to sustain the horse in advancing, and to curb him in action. This they are able to do very effectually, and in throwing the jereed it is absolutely necessary. Perhaps the most remarkable point about the Arabian horse is the extraordinary smallness of the head and mouth—so small, indeed is the latter that you would think they might use a common tumbler for a water-bucket.

The stirrup used by the Arab is singularly short, but the seat of the rider is not on that account the less secure, and it enables him, in rising on his stirrup to throw the jereed, or to strike a blow, to do it with an infinitely increased effect. The sudden jerk which is often given in these exercises to the stirrup-leather, makes it necessary to secure it much more firmly than we do. This is done by ten or twelve straps or thongs, and the stirrup, in place of being a narrow bar, is so constructed as to allow the whole foot to rest on a plate of iron reaching from the toe to some distance behind the heel, where it is sharpened so as to serve the purposes of a spur.

The Arab feels that his safety depends on the quality of his accoutrements, and this is a point to which his attention is constantly directed. In action they never dismount, so that when you see a horse during an engagement without a rider, you may conclude that he is killed or badly wounded. In the hands of a European unaccustomed to the habits of the Arab horse, unacquainted with the manner of treating him, the animal appears to be extremely vicious, but let the same horse be mounted by a native horseman, and he will be found to be gentle, docile, and obedient.

I need say nothing of the sabre, which is their favorite weapon, and is always light and handy, of a curved form, and of considerable strength, the best being made at Damascus. But the use of the jereed is not so much known: its length is about four feet, with a steel head, well-tempered and well sharpened. It is used as a missile, and four of them are generally carried in a small case under the thigh of the horseman, so as to enable him to seize one of them very quickly, and the case is fastened to the saddle by loops behind and before.

THE HISTORY OF A MAN AND HIS NURSERY.

"The evil which every man feels will be enough to disturb and harrass him if he does not know how much he escapes. The lustre of diamonds is invigorated by the interposition of darker bodies; the lights of a picture are created by the shades."

We know not when we have perused anything with livelier interest than that which was felt in reading the following plain story of a man and his nursery. What a lesson it teaches of courage and manly perseverance under difficulties! Read it, ye sluggards, who in full health, and sometimes possessing hundreds of acres, are yet ready to give up in despair, and for relief, would put on the menial livery of office, or worse, if possible, fly to the grog shop or the gaming table, instead of a manly reliance on your own exertions, seeing, as here you may see, under what trials, and even severe bodily afflictions, a man of spirit may accomplish all that is needed for rational enjoyment. Who can doubt that Wilson, on the fruit of his own raising, and the milk of his "one cow," eats as hearty meals, digests as well, and sleeps sounder, than many a rich nabob, whose mind is corroded with anxiety, and whose very dreams are disturbed with the fear that he may not die richer than his neighbor?

For ourselves, desirous as we have ever been, to spread the knowledge of whatever may transpire that is really new and instructive, in the way of progressive practical agriculture; we yet confess to the greater pleasure we sometimes find, in presenting to our young readers occasionally, examples such as is here exhibited, of moral firmness and successful bearing up, under a load of difficulties, apparently insupportable. The lesson may be as useful, even in the practical business of life, as the sight of a fat sheep, or a more than the "thrice told tale" of how to fatten an acre of land.

And here again we take occasion to repeat, what is worthy of note elsewhere, that in N. England, where consumers employed in other industries, are close by the producers employed at the plough, a great number of farmers find profitable amusement in raising their own little nurseries of fruit trees. If they do not graft and bud them themselves, as most of them do at least for their own use, they have always enough for themselves, and the residue are ready to be sold to professed nursery-men, who are thus saved the time and trouble of raising them from the seed. But where fruit is most abundant, there is the very place, be it borne in mind, where public taste most demands that it be *good*. The very *presence* of customers, in this as in other cases, promotes at once, both consumption and improvement. Thus, *in* New England, where a man on a farm of forty or fifty acres, will realize more from his orchard, than in some other parts of the country is realized from the staple crops of a farm of five hundred; there, to be saleable, fruit *must be good*, and that which is good, will always command ready sale and a good price. They say, "a good sized apple tree of *choice* fruit will frequently produce more profit than an acre of corn, or rye, or oats, and every tree that is sound and thrifty may, by ingrafting, in half dozen years, be made to yield good crops of valuable fruit."* It requires, say they, "little more care to raise a Baldwin, a Greening or Russet apple tree, than it does an insignificant seedling—the fruit of one worth from fifty cents to a dollar a bushel for winter, the other from eight to twelve cents, for vinegar or to feed stock." But enough, says the reader, in the way of mere introduction

* For the profits of fruit culture in New England, and the true causes of the decay of orchards and gardens in the "free trade" states, the reader is referred to another article in this number.

to your story of Mr. Wilson and his nursery—so we have only to add the promise that we shall not fail to bear in mind the importance of the best instruction in regard to the rearing and management of fruit and fruit trees—and the more especially, as we hope the time is fast approaching that the presence of manufacturers of leather, cloth, glass and iron, and the immense addition which may be made to their productive capacity by the use of steam and railroads, and otherwise, will teach land holders of five hundred acres in the middle and southern states, what may be done, as is here shown, *even on an acre and a quarter!* But this they will never learn as long as they continue to import millions of dollars worth of wool, flour and beef, in the form of English cloth and English iron, made there by labor just kept at the point of not quite starving to death, while their own immense sheep pastures lie waste, and their own coal and iron lie buried in the bowels of the earth.

SIMEON L. WILSON'S STATEMENT.

Having been favored with a visit from the committee on farms, and requested by them to make a statement of facts relating to my place, it is with pleasure I comply with their request. I suppose their attention was attracted to it by the peculiar circumstances under which I have labored, in bringing a barren piece of land to its present fertility. I will briefly state the particulars. At the age of thirteen years I became a cripple, by a white swelling on my knee, which caused me to lose the use of that joint. I at first got about upon crutches; afterwards with only a cane, and finally without the aid of either. And whilst I was buoyed up with the hope of again getting well of my lameness, or nearly so, I was afflicted with a paralytic stroke, which caused me to lose the use of the other leg very suddenly. This took place in 1831, when at the age of twenty-two years; since that time I have not been able to walk one step. At first this affliction seemed to dishearten me, and I came near giving up in dismay. But hope predominated, and I made a vigorous effort to obtain a livelihood by my own industry. Not having any trade, I commenced closing shoes. By applying myself very closely to my business, working early and late, I succeeded in obtaining a sufficient sum of money to purchase one acre and sixty rods of land, near Methuen village. With a little assistance, I soon had a house on the same, into which my parents moved in the fall of 1836. This piece of land, although but small, has a variety of soil, viz.: a gravelly hill, yellow loam, black loam, or clay soil, rather moist, and a swamp, very wet, with muck eighteen inches deep on an average, with a clay and sandy bottom. The swamp was covered with a thick growth of alders. The upland appeared to be almost filled, or paved, with small stones. The whole lot was a very bad looking piece of land. In the spring of 1839, the stones were picked off the upland, and it was ploughed for the first time, which threw up as many more small stones as had already been picked off. The alders were cut from the swamp, and a ditch dug through the same to drain it. I then undertook to plough the wet, or swamp land, with six oxen; but they did little more than merely to tear it up in spots, there being so many roots. It was so bad I concluded not to cultivate it.

At this time I built a shop adjoining my house, from which I could see to any part of my little farm, and give directions about the work without leaving the shop. Having but limited means, and not being able to do much on the land myself, I made but slow progress in improvements. I commenced a ditch six feet from the ploughed or upland, and ran it around the swamp on three sides, six feet wide and eighteen inches deep, and threw the muck upon the space between the ditch and upland, which gave me six feet more in width to my upland around the meadow. This looked well, and I was not content to stop here. According to the Yankee motto, thinking it best to keep moving, the following year I filled the ditch with stones at the bottom, then gravel, then loam, until it was filled even with the surface of the swamp. Then I cut another ditch around the swamp, directly beside the one that I had filled up, and threw the mud on the same, which added six feet more, or twelve feet in all, to the upland on three sides of the swamp. I again filled the ditch as before, and threw the muck from another on top. I pursued this course, until the whole swamp was reclaimed, which raised the surface eighteen inches higher than it was before. I then removed more than half of the muck to the upland, and returned as much loam from the upland in its place. Then by ploughing, the loam and muck were well mixed. I have an open drain leading through the meadow, from the spring by the hill, to a drain by the road; thus the meadow is rendered dry enough for any kind of cultivation.

This method could not be practised as a general rule, with regard to economy in regard to economy in reclaiming wet land. I had good reasons (or thought I had) for re-

claiming my own in this way. In the first place, it was but a small piece, near the house, and a convenient place for a garden. I also wished to remove the gravel and loam from the side of the hill to put in a bank wall, and make room for a row of cherry trees. I wished to make it myself, and add to the beauty of the scenery about the garden. Having but limited means, and keeping within those limits, I made but very slow progress, and was three or four years reclaiming my meadow. The stone, gravel, &c., was wheeled on a wheelbarrow from five to fifteen rods. The cost of reclaiming the meadow in this way was about three dollars to the square rod, or $480 to the acre. But I must charge the upland with half that amount; for every load used to raise the meadow was taken out of the way from the upland. It would thus leave the expense of the meadow at the rate of $240 per acre.

In the year 1841, I received a few fruit trees of choice kinds, from a nursery near Boston, which was the commencement of my setting fruit trees; and from this date I made it my practice to set a few trees each year, of the best varieties. I would here mention, that wishing to avail myself as much as possible of useful information in regard to farming, gardening, and the management of fruit trees, I became a subscriber to the Boston Cultivator, at its commencement, in 1840. Since that time I credit its editors and numerous correspondents with much valuable information. The more I studied into the art of gardening and growing fruit trees, the more lively interest I took in the same —not more for the profit than by the beauty of the scenery, to make home the more sweet. In 1843, I transplanted to a row by themselves, a few small apple trees, that had come up spontaneously about my place; and the following year I pursued the same course, at which time the row numbered about one hundred and fifty trees. In 1845, the largest of these I had grafted, and at the present time, one of these trees has fruit on it, being only six years from seed and four from graft.

In 1846, I concluded to commence a small nursery of fruit trees. Having previous to this obtained Downing's work on Fruit and Fruit Trees, and also Thomas's and Kenrick's upon the same subject, I had studied their manner of treating fruit trees, both in the nursery and as standards, and could fancy much pleasure in the same. At this time I sowed seed of various kinds, and bought a few seedlings suitable to bud the succeeding summer. My meadow being now about completed and made dry, it gave me more room to extend my nursery. In the spring of 1847, I grafted a few apple trees on the root, with good success, and the following July commenced budding for the first time. At the present time I have my land so completely covered with trees, that I am forced to convey the dressing to it in a wheelbarrow.

Although I can do but little in the nursery myself, I usually go into it every day, (upon the wheelbarrow) and see what is in the most need of being done, and lay out the work for the day. Sometimes I work there myself, by getting upon my hands and knees between two rows of trees, and trim or weed them as I creep along. Sometimes I bud a few trees myself, but it being rather inconvenient for me to do this work,—I consider it better to work in the shop, and hire the budding done. It requires nearly all the work of one man now to attend to the nursery. The number of trees on the place at the present time is as follows:

Apple,	6787
Plum,	388
Cherry,	814
Pear,	2947
Peaches, Apricots and Nectarines,	640
Quince,	377
Whole number, including all varieties and sizes,	11,953

Together with a great variety of Grape Vines, Strawberry Plants, Gooseberry and Currant Bushes. The whole quantity of land cultivated is about one acre, there being about one third of an acre used for yard, buildings, &c. I raise between the rows of trees the various kinds of vegetables needful for family use.

One row of apple trees, one hundred and twenty-five feet in length, and containing four hundred trees, budded September last, now stand five and a half feet high, of the present year's growth. But to be more sure of a good growth another year I intend to transplant some of them. My apple trees have borne but little fruit yet, which I account for by the rapid growth they are making. My stone fruit trees would yield me large crops, were it not for the curculio. I have tried many experiments to no avail, and some with more success. I have applied salt to plum trees since I first commenced growing them, using from one to two quarts to each tree, according to its size, spreading it in March or April under the branches of each tree as far as they extend. Although there is no perceptible dimunition in the ravages of the curculio on the trees thus treated, yet I use salt annually, as I perceive it to be of great benefit as a fertilizer. I practice washing my trees annually with potash, or strong soap-suds, and throwing dry ashes on the trees, when the dew is on them in the morning, and am not much troubled with insects, except

the curculio, and sometimes the borer. The borer is only destroyed with knife and wire, by watching the trees.

I will here mention a successful experiment for the protection of the plum against the curculio. Last year I made two bags of old thin muslin and drew them over two limbs about the time the fruit set. Within each of these bags I saved a few beautiful plums, and not a plum did I save on any other part of the tree. Taking courage at this good success, I bought last spring a few yards of bonnet lining which I made into bags, according to the size of the limbs I wished to cover. These I drew on the limbs of several trees, some when the plums had set, and others when they were in the blow; for I found the enemy had made their appearance while the trees were in bloom. Under each of these bags I saved plums, apricots and nectarines, upon limbs of twelve different trees; and these were the only ones I saved this year. The first of August I removed the bags, the curculio having disappeared. Some may think this would be too expensive, but I think not. The muslin would last many years; and by training the trees, or the branches in the right form, they might easily be covered, to the profit of the fruit grower. Be this as it may, I have found it of great use to me, as I had bought a variety of choice plum trees from which I did not like to use buds and grafts, until I had proved the fruit. This I have accomplished. One small branch covered by a bag, measuring six and a half by nine inches, contained twenty-one beautiful plums, hanging in one solid cluster, causing the little limb to bend so much beneath its weight, as to require a prop to support it. Upon another tree (the Moorpark Apricot,) I saved eight apricots, under a very small bag. I am training some apricots and other trees in the form of a fan, to make them the more convenient to be covered with the muslin.

I would here mention that I have this summer been using refuse tobacco with good success in driving away the insects. On throwing the dust, or snuff into the tree, we can see the rose bugs and other insects leave the tree immediately. I also use it around the roots of peach trees for the borer. Until within two or three years, the only manure used by me, has been the compost made in the summer, as follows: weeds, potato tops, pea and bean vines, or any other vegetable matter, mixed with sand and loam in alternate layers, when for low land; and with muck, when for upland. This heap would receive the scrapings of the yard, road-side, and also the washings from the house daily, together with some salt and ashes; this, with the manure from the pen of one hog, mixed with it, has been all the manure I have used until 1846. Then I bought a cow, and in 1847 a horse; of these, about half the manure has been used on other lands.

Although I have been many years doing what capital could have done in much less time, yet I have the satisfaction of building up my little place by my own industry; laboring under very unfavorable circumstances, without capital, and without the use of my legs. But I am now in a forest of fruit trees, planted by my own direction; and the soil drawn upon the roots by my own hands, as I sat upon the barrow or box. I can now view the works of the Almighty in the growth of these trees, and the production of their fruit.—*Trans. Essex Mass. A. Soc.*

Methuen. *September* 3*d*, 1849.

EXHAUSTION OF THE LAND, A NECESSARY CONSEQUENCE OF DEPENDENCE ON FOREIGN MARKETS.

Tobacco Land.—Professor Johnson, in the course of lectures delivered by him a short time since, before the New York State Agricultural Society, among many valuable facts worth the attention of agriculturists, stated that tobacco was a crop which contained much mineral matter. Suppose, says Professor Johnson, an acre to yield eight hundred pounds; these eight hundred pounds will contain about one hundred and sixty pounds of mineral matter, which is carried off by the crop, and in this way the land will soon be exhausted. In four years, six hundred pounds of mineral matter would be carried off from an acre of tobacco land. It is the duty of the farmer to supply the mineral matter thus specially exhausted, if he wishes to sustain the soil.—*Balt. American.*

Maryland and Virginia have exhausted themselves in growing tobacco for foreign markets. They have extracted from the soil all that it contained that was fitted to afford nourishment to vegetation, and they have returned to the earth no part of the refuse of its products. Ohio has followed in their wake, and the consequence is, that her produce of wheat has fallen to less than twelve bushels to the acre. The further consequence of this is shown in the following paragraph, which we take from one of the journals of the day:

The Daily Scioto, (Ohio) Gazette, of the 26th inst., says that the emigration from Ohio to States further West is very large this year. Ross county alone has lost a number of its most substantial citizens.

THE EFFECT OF PLOUGHING IN GREEN CROPS, AS COMPARED WITH FEEDING THEM.

This is a question to be regarded, in various lights, and altogether offers to the inquiring agriculturist a wide and very interesting field for investigation and experiment.

It will be seen that an eminent agricultural lecturer in England, contends explicitly, that "*the ploughing-in of any green crop and its subsequent decomposition in the soil, will give more manure to that soil, than if the crop had been fed off.*"—

If the reader will pass on to the next article to this but one, kindly communicated by the much respected President of the Essex Agricultural Society, he will find, that the testimony adduced by the English lecturer, in support of his theory, from practical farmers, is strongly corroborated by the effect of a different experiment related by a worthy practical farmer, of Danvers, Massachusetts. True, he has not compared the effect of the manure produced, from an equal quantity of oats fed, either off or on the ground; but who can doubt that it was greater, in this case, than would have been the manure which the oats alone would have produced if so employed, without saying anything of the expense and trouble of so employing them, as compared with merely turning them in, and leaving them to decay, and yield their fertilizing power to the crop of onions grown upon them? It is, indeed, this immense saving of labor accomplished by turning in green crops, which would of itself recommend it to more general adoption; and here is a case in which agricultural chemistry may do its office, by deciding to what extent any given crop to be turned in, may contain the elements essential to the growth of the one which is to follow it. Mr. Bruxton would seem to have proved in this case, by the most reliable of all tests—experience—that oats make, in this shape a *meal for onions*, as wholesome as for horses in another stage of their growth. The whole experiment, in fact, and its results, constitute that new and valuable information, which agricultural exhibitions elicit, when parties explain how certain results are reached, much more valuable than the *mere exhibition of fat* and fine things; and we may here say very sincerely, that in our view, this communication possesses adventitiously, a decided additional interest from the fact of the copy of it reaching us, in a very fair and very legible hand, of a little school lady, not yet in her teens, the daughter of the President of the Essex Agricultural Society. These are the children who truly "honor" their "parents;" and for whom, when grown to womanhood, it may be fairly and justly claimed.

"Give her the fruit of her hands, and her own works praise her in the gates."

[*To the Editor of the Mark Lane Express.*]

Sir,—It is yet a common notion that herbiverous animals have some distinct and peculiar mode of action upon the various constituents of their food, by which those parts expelled as excretæ are rendered more fit for the food of plants than could be the original food, rotted or decomposed in any other way. It is also ordinarily received that the deposits of a number of animals fed upon an acre of any green crop, will be more beneficial to the land than an acre of the same crop, ploughed in and properly decomposed in the land.

In my lectures, for some years past, I have endeavored to combat these opinions, but as they are still retained in some quarters, I intend in this letter to repeat my arguments, and to give instances where *practice* has proved the truth of theoretical deductions. I shall not here argue as to the amount of profit and loss attached to either mode

of proceeding, as in fact, must always depend upon circumstances, of which the farmer is the best judge. Nor shall I attempt to prove that, under all possible circumstances, to plough in a green crop will give a greater produce than to feed it off. For in case of exceedingly light lands, the mechanical action of the treading of the feet of the sheep might more than counterbalance the loss of manure by the feeding. What I assert, however, is, that under general circumstances, in ordinary soils, *the ploughing-in of any green crop, and its subsequent decomposition in the soil, will give more manure to that soil than if the crop had been fed off;* and that the effect of this greater amount of manure will be seen in the subsequent crops. The arguments in proof may be stated as follows:—

Firstly: It is well established that animals in breathing, give back more to the air than they derive from it. They receive nitrogen and oxygen, and return them again, plus a certain excess of nitrogen, carbonic acid, and aqueous vapor. Animals also transmit to the air much in insensible and sensible perspiration.

Secondly: The experiments of Boussingault and others have shown that the liquid and solid excrements of animals weigh less than the food from which they have been derived, and that as regards the food excretæ are deficient in *nitrogen*, carbon, and hydrogen.

Thirdly: It is well known that animals consume a considerable portion of the farinaceous and oleaginous portions of their food for the production of *animal heat*, and that the greater portion of the excess is laid up in the form of fat; that of the nitrogenous portion, part is consumed by the voluntary and involuntary motions of the muscles, and part forms fresh flesh for the growing animal. Of the inorganic matters of the food, a portion is required for the formation of bone. It is, therefore, quite clear, that there must be much less manuring matter in the excrements than in the food, of which they are merely the unconsumed remains—*the ashes.*

Fourthly: It is known that animal and vegetable substances are composed of the same original elements; that all animal particles have first had vegetable life; that though the proximate changes and combinations of their aliments are most innumerable, yet, that the results of the ultimate decomposition of animal and vegetable matters in contact with air are the same.

Fifthly: To sum up: If, as it has been proved, the excretæ of animals weigh less than the food they have eaten; if there is a diminution of the most valuable of the ingredients in passing through the animal; and if, in their ultimate decomposition, the food and the excretæ give the same products, it follows that the products of the decomposition of the original food will be greatest in quantity and richest in quality; but practical experiments are, in this instance, so easily made, that I should be wrong if I omitted to mention some of the numerous facts which experimentally prove the truth of my assertions. Mr. W. Trumper of Dorney, near Windsor, Mr. Oakley of Rochester, and others, have forwarded me the results of trials made on their respective farms. Mr. Trumper, in a field of rape part fed off by sheep, and the other ploughed-in, found in the succeeding wheat crop a difference of a quarter per acre in favor of ploughing-in. I insert letters from some other gentlemen who have also found favorable results.

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LETTER I.

MY DEAR SIR,—In reply to your letter, I am instructed to say, that the members of the Farmers' Moon Club, in the neighborhood of Rochester, Kent, unanimously agree that vegetable manures are peculiarly fructifying, and that, taking the case of a fallow or other field, being all previously of the same tilth, and sown with rape for feeding, and divided into three divisions, one of which shall be fed off with sheep without any extra food to the rape, the second division ploughed in, and the third division fed off with oil-cake or corn; that the worst corn succeeding the rape will be on the first division, the next best on the second, and the best on the third. Thus all speak in favor of green crop for manure.

Your letter came to me without a signature, but not to be misunderstood.

Yours truly,

JOHN OAKLEY, Old Broad-street.

August 10, 1849.

J. C Nesbit, Esq.

Members of the Club:—

Jno. Stunt, Gillingham	Jno. Walter, Upchurch
Ambrose Spong, Frindsbury	W. Walter, Rainham
Jno. Baker, Cooling	Cs. Smart, Gravesend
J. H. Solomon, Sherne	R. Cobb, Higham
W. Eley, Frindsbury	Jno. Oakley, Darland
W. Lake, Chalk	

One member deficient by a late death.

LETTER II.

Naseby, May 15, 1849.

MY DEAR SIR,—I regret I was not at home to answer your inquiry sooner, having been in Yorkshire the last fortnight; however, I hasten to send you the required information. In the spring of 1846, I had more turnips than my stock could consume; I therefore thought it was reasonable that, if the crop was broken to pieces and ploughed-in, the grain crop that followed would derive as much benefit as if eaten by sheep. I therefore did so with one acre on the first week in February, and with another upon the fourth week in March. Part of the rest of the field was eaten on the land, and part being newly ploughed upland, the whole crop was drawn off.

On the land where the turnips (white rounds) were broken and ploughed in, on the last week in February, the produce was 84 bushels per acre of Hopetown oats.

Where the turnips were broken and ploughed-in, on the fourth week in March, the produce was 74½ bushels per acre.

Where eaten on the land by sheep, 70¼ bushels per acre;

And on the newly-ploughed upland, the whole of the crop drawn off, 41 bushels of wheat.

I hope that this will be satisfactory; if not, I will make it so.

I am, yours faithfully,

J. C. Nesbit, Esq. PETER LOVE.

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LETTER III.

Assington Moors, June 15, 1849.

DEAR SIR,—I have just seen Mr. Underwood, who was a neighbor of mine eighteen years ago, but is removed to a distance. He says he has practised ploughing-in a few acres of turnips almost every year, for upwards of twenty years, and considers three sacks of barley per acre quite within bounds, as the increase from ploughing-in over feeding-off. The clover is much better; but he has not observed the wheat sufficiently to say what the difference is. He estimates an average acre of white turnips to be worth 30s. more to chop and plough-in any time before they begin to run to seed (say February out) than to feed off.

I inspected a field of wheat this week belonging to John Gurdon, Esq., which was white turnips three years back; a part were ploughed-in, and the rest fed off with sheep, and half-a-pound of oilcake per day each given to them. The wheat, where the turnips were ploughed-in, is decidedly better than the rest; I think three bushels per acre. Mr. Hudson, the steward, told me the barley was quite a foot higher than the rest of the field, and three sacks per acre, if not more, better. The clover was all fed off, and no notice taken; nor would anything more have been thought about it had not the wheat looked so much better than the rest all spring. The turnips were about three quarters of a plant but regular; the sheep went down with the epidemic, and were sold, leaving about two acres of turnips to feed; and rather than purchase any more stock they were ploughed in.

As I told you at the club, I am generally a buyer of turnips; but the obstinacy of my neighbor, Mr. Underwood, who refused to take 20s. per acre for his, to feed off (for the sake of convenience to me) when almost every body else were giving theirs away, attracted my attention to the after crop; and I can, in two instances, confirm his statements. Notwithstanding if 1½ cwt. of swedes (I think a ton of Swede turnips will make 14 lbs. of mutton, from experiments I have tried) and 2 cwt. of white turnips will make 1 lb. of mutton, and we can grow 21 tons of the former and 26 or 28 of the latter, it must be more profitable to feed at 5d. per lb. for the mutton, than to plough-in at 30s. or 40s. per acre in the corn crop.

I have been unwell, and could not see the parties, or I should have answered your note before.

I am, dear Sir, very sincerely yours,

Mr. J. C Nesbit. THOS. HAWKINS.

If these results are found incapable of convincing to your sceptical friends, they must have ensconced themselves behind a barrier of ignorance and prejudice impenetrable to the shafts of reason.

It may be necessary to say, that in ploughing-in a green crop for manure, great care is necessary in choosing a suitable time, and that it be not allowed, by two long growth to become fibrous, so as to delay its decomposition in the soil. For turnips, February, or early in March, is quite early enough, and the best effect is seen where they have been touched by the frost.

It is scarcely needful to say, that the arguments advanced do not apply to sheep fed on turnips with oilcake, unless an amount of oilcake equivalent to that consumed by the sheep in one instance were ploughed-in with the turnips in the other.

In conclusion, I reiterate that my object has been, not to prove that *ploughing-in* is profitable, in comparison with *feeding off*, but rather to elicit a principle which, if once known and understood, may, on many occasions, as when stock is dear, and green crops abundant, be brought into beneficial and profitable practice.

I remain, Sir, yours very truly,

J. C. Nesbit.

Scientific and Agricultural School, Kennington.
Sept. 14th, 1850.

CLOSING OF COTTON MILLS AND CONSEQUENT FLIGHT OF THEIR INMATES TO THE WEST.

The Tide of Immigration.—This "tide" continues to pour into our city and state. Yesterday and day before, some four or five hundred emigrants, mostly from the Eastern States, landed at our port, and our streets yesterday were crowded with teams carrying these new comers and their "traps" into the interior.—*Milwaukie Sentinel.*

These people are mostly, as we are here informed, "from the Eastern States." If our readers desire to know why it is that the people thus fly from those states where they would be customers to the farmer, we pray them to read the following statement, and satisfy themselves of the true cause why it is that so many persons are seeking to become producers of food, and thereby to increase that large surplus for which our un-*common-sense* friends in the *Union* assure us we need a market.

The Providence Journal publishes a list of the seventy-one cotton and woollen mills, all, with the exception of three, within thirty miles of Providence, R. I., that have, in consequence of the high price of the raw material, wholly or partially suspended operations. Many of these were manufacturing printing cloths. The New Bedford and Oxford mills, within thirty miles of the city, are still in operation. The Manville mills are running half time, and the mills at Pawtucket are running short time. The mills at Natick are running out, and will stop in a few weeks; and many other mills are preparing to stop.

Here are no less than seventy-one markets for food and clothing closed, within thirty miles of Providence. Add to these the other cotton and woollen mills closed, and the furnaces that are closed, and the bloomeries that are closed, and the rolling mills that are closed, and the mines that are closed, and it will be found that there are probably little less than one thousand of these markets for food and clothing that have been closed by the existing tariff, which professes to give protection by aid of what are called revenue duties. It is surely time for the farmers to awake to the fact that the people who are thus deprived of the power to obtain food in exchange for the labor employed in making cloth and iron, must seek to raise food for themselves, and that the effect must soon exhibit itself in an over-supply of food, and an under-supply of cloth and iron, with enormous injury to themselves.

We beg the planters to reflect what would be the quantity of cotton consumed in these seventy-one mills, and to seek in the accounts of the mills of England, now running short time, or in the importation of cotton goods, for any compensation for the enormous sacrifice of their interests that is now going on. In five years from the date of the passage of the tariff of 1842, the home consumption of their great staple grew from 263,000 to 600,000 bales, and it would now reach 900,000, had the tariff remained unaltered, whereas the total consumption of the country at the present time is *far less* than it was three years since, notwithstanding an increase of population of more than ten per cent., or probably two millions and a half of souls. Assuredly the world has never seen a case of much greater insanity than is now manifested by our planters in their determination not to make a market in the land for the products of the land.

NEW AND EASY MODE OF INCREASING A CROP OF ONIONS.

DANVERS, *October* 22, 1850.

TO THE EDITOR OF THE "PLOUGH, LOOM AND ANVIL:"

DEAR SIR:—Shortly after our Agricultural Exhibition, I forwarded a hasty reply to your inquiries as to the cultivation of *the onion* in this vicinity. As Chairman of the Committee on Root Culture, I have lately received from Daniel Buxton, a worthy farmer of this town, as well skilled in this cultivation as any man I know, a statement showing the result of his labors on about half an acre of land, this year. It is an unvarnished history of actual labor by the individual who performed it, entitled to entire confidence. It shows a net income from the land of at least $150 per acre. It suggests many facts connected with the cultivation worthy of notice. I enclose a copy (*prepared by my little daughter at school*) to be used as you may think proper. When our lands, by the proper application of skill and labor, can be made to yield in this manner, there can be no occasion to wander abroad for employment.

Respectfully and truly yours,

J. W. PROCTOR,

HON. J. S. SKINNER, Phila.

TO THE COMMITTEE ON ROOT CROPS.

GENTLEMEN:—In compliance with your request, I will endeavor to state the peculiarities in the cultivation of the field of onions examined by you, as near as I am able. The cultivation was not commenced with any thought of offering it for premium. I was induced to do this by the fact of having pursued a new mode of culture, and by the promising appearance of the field. The land is part of a lot of about thirteen acres that I have owned for a dozen years, situated on a plain near the Collins' House, in Danvers. Previous to my owning it, the soil was light, free of stones, of ordinary quality, yielding moderate crops only—say about thirty bushels of corn, or one ton of hay to the acre. Since I have owned it, it has been ploughed, deepening gradually, from *six* to *nine inches*, and manured freely; and kept as free of weeds and all waste material, as in my power. The parcel on which these onions grew, has yielded onions each year, for the last ten years. There has annually been applied to it a dressing of manure, averaging about five cords to the acre—*barn manure, compost, ashes, muscle-bed*—varying from time to time, as found convenient. I speak of the average application because I have no means of making the statement more particular. The last year (1849) I found the crop was not doing as well as usual; the plants began to wither early, and the produce was only about two bushels to the square rod. I thought the land needed some other nutriment. As soon as the crop was gathered, I ploughed the land and sowed it with oats. These came up well and grew large; and late in the autumn, just as the ground was about to freeze up, I turned these under. In doing this, I run the furrow deep, using *a side hill plough*, so as completely to cover the herbage, and there it remained until spring. On examining it in the spring, I found the oats as sound as when they were turned in, consequently I could not use a plough on the land without bringing them to the surface, I therefore went over the ground several times with a cultivator, taking care not to disturb the oats beneath. I then applied a moderate dressing of pure manure, taken from my hog-yard—a sort of compost of meadow-mud, stable manure, &c., refined by the operations and droppings of the swine, not exceeding three cords to the lot; and having pulverized the surface as perfectly as in my power, I distributed the seed, by the use of a machine, in our usual way, in ROWS FOURTEEN INCHES apart. It came up even and abundant, and grew finely. For the first six weeks I saw nothing peculiar in the growth, after this there was a greenness and healthy vigor about the plants, that indicated the operations beneath. This vigorous appearance still continued until the plants fully matured. In the same field, within a few rods, was another parcel of onions, cultivated and manured in the usual way—the contrast between the two parcels was quite striking—the one I describe yielding at least one third more than the other, and of a quality decidedly superior. This parcel was found to measure one hundred and five square rods, and the quantity produced four hundred and forty-eight bushels; or a yield of three and a third bushels to the square rod.

The produce was remarkable for uniformity in size, varying from *one to three inches* in diameter, and of the thick plump form, that I have been endeavoring for years to grow. I raise my own seed, and select for this purpose, plants of the form and description that I wish to produce. By continuing this process for years, I have found that the form can be very materially changed. I have seen, the present season, onions of larger size, and more abundant; but have not seen any, the crop as a whole, that I should prefer. I am the more particular in this description, as I think the experiment with the oats to have been quite beneficial. I have repeated it again the present autumn. The crop of onions generally in this neighborhood, the present season, has averaged, I should think, about four hundred bushels to the acre.

I am now delivering onions at the depot in Danvers, at the price of *seven shillings* per barrel—or about *forty cents* a bushel for the onions, [$160 an acre.] There is no crop, to my knowledge, that yields a better reward for our labor. If this plain statement of facts shall be thought worthy of your notice, I shall be gratified in having thus contributed *my mite* for the information of my brother laborers in tilling the soil.

DANIEL BUXTON.

Danvers, *October* 21, 1850.

A few words from Mr. Proctor on the different *kinds* of onions most in use in New England, the kinds most esteemed, most productive, &c., would have been satisfactory.

The following are the constituents of Onions, according to Fourcroy and Vanquelin:

Acrid Volatile Oil,	Woody Fibre,
Uncrystallizable Sugar,	Acetic and Phosphoric Acids,
Gum,	Phosphate and Carbonate of Lime,
Vegetable Albumen,	Water.

"If," says Doctor Pereira, in his treatise on Food and Diet, "the volatile oil of onions be dissipated by boiling, these bulbs no longer possess any acid or stimulating qualities. They then form mild and digestible aliments: whereas, in the raw state, that is with the oil, they are pungent, acrid, difficultly digestible stimulating substances."

Mr. Strachan, in the Horticultural Transactions, has described eighteen distinct varieties. By far the most generally cultivated in England is the Strasburgh, *Dutch* or *Flanders* onion. So called when the seed is procured from thence, or *Essex onion*, when the seed is saved in that country. Its shape is oval, large, and light red, tinged with green, hardy, keeps well, but of strong flavor.

The largest onion grown is the *Tripoli;* oval, light red, tinged with green and brown, soft and mild, but does not keep long after it is taken up.

There is an onion, called the under-ground or potatoe onion, which multiplies itself by formation of young bulbs, on the parent root, and produces an ample crop below the surface; ripens early, but does not keep beyond February; flavor strong.

The *Welsh onion,* or Ciboule, *A'llium fistulosum,* is a native of Siberia; hardy, strong in flavor, but does not bulb; sown in autumn for drawing in spring.

For early use, in England, the Portugal and Spanish onion yield the greatest crops. For principal or main crops, the Strasburgh, Deptford and Globe are generally preferred; the silver-skinned and two bladed are considered the best for pickling. The Potato onion is occasionally planted as an auxiliary crop, and the Welsh onion for drawing early in the spring.

Why is it that the onion should be cultivated so much more extensively, and regarded so much more as a staple crop in New England than in the Middle and Southern States?

LIQUID MANURE—QUANTITY TO BE SAVED FROM A GIVEN NUMBER OF ANIMALS.

Our country is yet comparatively so new, and labor applied to agriculture so high, compared with its price in all other countries, that we have not yet entered on the *refinements* of agricultural practice. How few farmers there are, who bestow a thought on the amount sustained annually by the *loss of the liquid manure of their estates.*

To the solid mass they pay more attention, because being visible and *tangible*, they consider it of more value; but the calculating farmer will take care, that even though he has no contrivances for collecting and applying it, in its liquid form, arrangements are made for its absorption and preservation, as far as possible, by means of litter, turf, leaves, &c., provided for that purpose. As far as this method of saving it goes, the farmers of New England are beginning to make the necessary provisions, in cellars over which their domestic animals are stabled. To that extent we observed the requisite arrangements at Mr. Webster's farm at Marshfield; at Mr. Newhall's, near Boston; and in Mr. S. Lawrence's well-arranged stables, at Lowell, and others.

But in Old England, where tenants can scarcely make their rents and pay poor-rates and taxes, with labor at $2 a week, (the hireling or the hind, as he is quite commonly called, finding himself;) and where the average produce is said to be from 25 to 28 bushels per acre; there, necessity has driven every cultivator to practice what may be called as we have said, the refinements of agriculture. There they are getting in the way of building *tanks*, to save every drop of liquid manure.

So important is the subject considered, that the Scotch agricultural societies lately offered a premium of ten sovereigns for a "*Report on the best mode of saving and applying the liquid manure of farm steadings.*"

The prize Report was written by a person who "has had, as agricultural engineer, every opportunity of observing the various methods practised by many leading farmers, in some of the best agricultural counties in Scotland and England." Appended to his report is a plan of a farm steading, with a tank for liquid manure, (as well as suitable places for the dung yards,) "into the end of one of which all the drains conveying the urine from the various houses run." Here in many parts of our country, on the contrary, the cow yard and its contents are generally left exposed to all weathers; being sometimes constructed on a warm *hill side, the better and expressly to keep it dry* by letting every thing wash away as speedily as possible. To leave the American farmer then, no excuse for being ignorant of what he does lose of liquid manure, from a given number of animals, (that is, *if he will read it,*) we submit the following, "calculated produce of urine from a certain number of animals kept in the house and fed on green food;" taken from the prize report above mentioned:

		Gallons.
Cows and bulls,	21	
Fattening bullocks,	18	
	39 at 3 gallons each,	117
Queys,	10 at 2½ "	25
One year old cattle,	20 at 1½ "	30
Horses, old and young,	16 at ½ "	8
Swine,	15 at ⅓ "	5
		185

Which, for the whole year would be - - - - -		67,525
But, as the horses will be employed in the fields at an average of 8 hours daily, one-third of the urine they make must of course be deducted, which is - - - - - - - -	Gals. 973	
And the cows and young stock, exclusive of the bullocks, may also be more or less in the fields, at an average of say 4 hours daily, one-sixth of what the produce must also be deducted, which is - - - - - -	7,178	
		8,151

This shows a produce, available for the whole year, of 59,374 gallons from the stock kept on such a farm as the reporter has assumed. But as it is proved that, in its original state, it is much too caustic and strong to be applied to grass lands with advantage and economy, it should be well diluted with water, and applied frequently in a weaker state; these 59,374 gallons should, therefore, at least be doubled, by adding water, making—

	Gallons. 118,748
And to which must be added slops from the dwelling house, being dish-washings, soap-suds, and contents from the water-closet, &c., at the low estimate of 10 gallons daily for 365 days. - - -	3,650
Here then is, in whole - - - - - - - - - - -	122,398

gallons, which will irrigate 30 acres three several times, allowing 1,200 gallons per acre each time, and that after allowing waste by absorption, evaporation, or otherwise, and a considerable quantity for throwing daily over the dung, as pointed out. If, however, the cows and young stock should be kept a longer time in the house than the reporter has stated, then, of course, a greater quantity of urine will be made for the purpose of irrigation, and for saturating the dung.

EFFECTS OF SEPARATING THE CONSUMER FROM THE PRODUCER.

Physical Effects.—A letter from Kilkenny, Ireland, says, that "A large number of the population have already gone to America; they are going every day, and more will assuredly follow. The state of the agricultural population is scarcely a degree above pauperism. The general rate of wages is 6d. a day, without food, and women employed in binding during the harvest have received only 3d. a-day."

Moral Effects.—The criminal tables for Ireland, for the year 1849, show an increase of committals of 3467, or 89.9 per cent. on the preceding year. The gross annual number of committals for a period of seven years, in 1849 has ranged from 16,966 (1845) to 41,989 (1849). In 1843, the total number of committals was 20,120; for the next three years it was below 20,000; in 1847, it rose to 31,208, and in 1848, to 38,522. A comparison of the year 1849 with its predecessor shows in crimes against the person with violence, a decrease of 11.8 per cent.; in those against property with violence, an increase of 4.7; in those against property without violence an increase of 15.5; in malicious offences against property, a decrease of 23.73; in forgeries and offences against the currency an increase of 30.05; and in miscellaneous offences an increase of 6.01 per cent.

Industrial Effects.—Portugal, it is said, will send no contributions to the Great Exhibition of 1851.

For more than a century Portugal has had almost free trade with England, of which she has been a mere colony, and the consequence there, as every where, have been poverty, depopulation, and barbarism! Such s the tendency now in Canada. "Huzza for Free trade!"

THE BALDWIN THEORY AGAIN—MORE FACTS—MORE DEMONSTRATION.

BALTIMORE, *October* 24, 1850.

DEAR SIR:—You would gratify many of my readers by the submission of any *facts* which may have come to your knowledge in corroboration of your theory, that *shade* is the great resource to be relied on for the improvement of land. There are many circumstances that encourage a belief in its soundness, which have fallen under my own notice, but farmers are a matter-of-fact class of people. Perhaps it is well that they should be, though I well know that they are sometimes a little slow in their belief of facts; as for instance, there is nothing needed (except personal experience) to convince them of the value of *guano,* which I did not communicate more than twenty years ago, along with barrels of the substance, but although they now cannot get it fast enough at $50 a ton, then they were either very incredulous or very slow to heed. As the conductor of an Agricultural Journal, it is always agreeable, when we can, to support theory by facts. It may be in your power to state some, specific and to the point.

Very respectfully,

J. S. SKINNER.

WINCHESTER, *November.*

DEAR SIR:—Those of your readers who require facts in support of the theory of shade, are probably not aware that those propositions which I submitted for your consideration in October last,* and which you were pleased to denominate the Baldwin Theory, were inductions from numerous facts which had passed under my personal observation, during an attempt to renovate a large tract of exhausted land in this county, and which had all been published in previous numbers of the "Plough, Loom and Anvil." Those facts, I understand, have been subjected to the test of experiment, and I believe, are universally admitted to be true by observant practical farmers. It is no longer a mooted question in the valley of Virginia, that *all soils alike may be make exceedingly fertile by shade alone.* This is the important fact, which will enable every farmer to fertilize every acre which he may be able to cultivate; and this, *the fact* which in my opinion must prove fatal to the existing theories in agriculture. For no one will contend that *humus* is the residue of vegetable decomposition, if he understand that it can readily be formed by substances incapable of decomposition. Nor can he believe that those plants known to impart fertility to the earth during their growth, obtain it by their tap root from the mineral constituents of the sub-soil, or take it through their leaves, in carbonic acid and ammonia from the atmosphere, if he know that an equal fertility may always be produced by a covering of plank or straw.

I will quote, from the "Domestic Encyclopedia," published in 1803, a very striking fact, illustrative of the fertilizing power of shade, although the author only intended it to prove the indifferent quality of manure made by feeding cattle in the fields. "A fodder-house (a hollow rick made of maize-tops in the way of thatch) was set up in a field, as is usual; it was fenced in. At the south front maize was husked, and the husks were sheltered in the fodder-house. In the course of the winter they were given out to cattle, in front of the rick. In April, the fodder-house being then empty, was pulled down, and the covering of maize-tops were given to the cattle. The ground thus *sheltered* by the fodder-house for six months, October to April, showed marks of richness greatly superior to the ground on which the cattle were foddering during the same time: grass, weeds, and crops, during the four or five following years of my remaining on the farm, showed this in their growth. Where the fodder-house, three hundred feet long and twenty broad, stood, and sheltered the ground, the richness of the soil was strongly marked; when but a faint superiority over the common field appeared on the part where the cattle were foddered."

I will quote also, a paragraph from Von Thäers' Principles of Agriculture, page 211. "I have often seen the washed, but not rotten straw, thus left on the ground, removed to form fresh litter, and nevertheless, the soil from which this straw has been collected,

* See page 261 of this vol.—Edit. P. L. & A.

appeared as perfectly manured as if all the straw had been decomposed. Meadows are often manured in this manner. I have so often seen the good effect of long or short dung thus spread over beans and peas, and left there during their growth, upon hot, light land, that I have no doubt of its advantage on these two crops. But what is still more remarkable and difficult to explain, is, that the following crops on land treated in this manner, are also superior to those on which a larger quantity of decomposed manure has been ploughed-in."

The practical advantages which will result from the introduction of the principle of shade in the science of agriculture, are too manifest to require comment. When it becomes properly appreciated and practised by agriculturists in the Southern States, I venture the prediction, that the opinion now so prevalent, that the impoverished condition of the soil is one of the evils necessarily consequent upon slave labor will be utterly repudiated. For we can readily believe, that with the ability to cultivate well, nothing more can be requisite than the ability to fertalize.

Very respectfully yours, &c.

ROB. T. BALDWIN.

We presume there is scarcely a person who has not remarked the effect of building "fodder-houses," and stacking hay and straw on poor land, while not one in a thousand has stopped to reflect upon it, and to "calculate" to what practical uses the hint might be turned. It is the fate of almost all new and important suggestions, to be received at first with inattention or incredulity. Most agriculturists would go out of their way to admire a fat beef-eaten, prancing stallion, rather than take the trouble to investigate, reflect, or experiment upon a new principle when suggested; and the great reason is, *want of appropriate education!* The tree is left too long to grow and take its set, before any attempt is made to give it the proper direction. We must improve our systems of education, and to obtain the means and facilities for that, we must diversify employment and *thus* thicken population!—*Ed. P. L. & A.*

Saltpetre for Wheat.—The May number of the London Farmer's Chronicle gives an account of an experiment made near Glasgow, on the application of eighty-four pounds of saltpetre—*sulphate of potass*—to an acre of wheat. One half was sown the 17th of April, the other the 5th of May. The unmanured wheat weighed 2552 pounds; straw 3148. Manured wheat weighed 3068 pounds, straw 4500 pounds. Difference in weight of wheat, [more than eight bushels] straw 1323.

The above figures demonstrate the interesting fact that each pound of the salt named gave per grain, six pounds of wheat and sixteen of straw, making twenty-two in all.

Mr. Kimberly, an English farmer, says one hundred pounds of saltpetre, sowed on an acre of sandy land, is equal, in its fertalizing effect, to twenty-five *cubic* yards of horse dung. One of its excellences consists in its enriching power continuing longer than any other manure—even for several years. It is stated to have paid well in some instances in the United States. It is sowed like plaster of Paris, in moist weather, in its crude state, in which it is used: the price is three or four dollars per hundred.

This is an experiment so easily to be made, upon wheat already sown, that we are sure we shall be supplied with the exact result of some yet to be made, by our friends Jones of Delaware, Mr. Colt of Paterson, N. J., and others, who need not be reminded that in all cases of experiments, many small particulars are material, which are apt not to be heeded; but the great point to be arrived at after all, is whether the play is worth the candle. *Will it pay?* is the true problem.

This recommendation of saltpetre is worthy of note, on the ground that guano was recommended by us twenty-five years ago, and is now so popular, to wit: on the ground of economy in *transportation* and *application* of it. After all, the great desideratum for American farmers is not so much how to increase the quantity of products, as it is how *to bring nearest to your land* the greatest number of prosperous consumers, who are able to consume much, and who must always consume to the amount of their products, let them labor at what they may. Every man does that, who *uses* his income in *any way*. Hence, American customers, employed in other industries, are worth more to the American farmer and planter, plus their wages or income over the wages of labor employed in other countries in rivalry with us. Will farmers ever understand this, and force their law makers to act accordingly?

MEAT BISCUIT.

A NEW DIET FOR THE ARMY AND THE NAVY, PORTABLE AND ANTI-SCORBUTIC.

THE following, from one of the very best dragoon officers in the service of the United States, relates to one of the most important dietetic discoveries that has lately fallen under our notice. The reader will require no comment from us to point out its value, nor the numberless cases in which this condensation of the great elements of subsistence—meat and flour—rendering thereby the means of subsistence at once portable and preservable—may be of immense advantage to whalers and other navigators on long voyages. Who can say how important to be able to lay up, in so small a space, an ample supply of anti-scorbutic provisions? We lately saw it stated, we think it was to the very learned Superintendent of the Coast Survey, that a government vessel, employed in making a highly interesting survey on our own coast, in the usually short season of favorable weather in those latitudes, was compelled to abandon the ground in the finest weather because she could not store provisions enough to maintain her position. With this palatable and substantial *meat biscuit* there would have been no such difficulty.

But our purpose now is merely to register this unequivocal evidence of the great national importance of a simple discovery; and we do it with none the less of pleasure for believing, as we have reason to do, that the discovery grew out of a publication of our own, first in the old "Turf Register," (and more recently repeated in the "Plough, the Loom and the Anvil") of an extract, selected by permission, from the celebrated manuscript journal of Col. Bird, on his survey, long before the Revolution, of the line between Virginia and North Carolina. A manuscript which served for many years to amuse those who had the happiness to visit, on friendly terms, the charming residence of the late George Harrison, of Brandon, on the James River—a gentleman and his gifted lady, distinguished even among their peers, for the hospitality and fine qualities that have made the very name *Virginia* gentleman, or *Virginia* lady, itself a distinction.

The extract, if we remember rightly, was a curious description of the sort of provision made by the Indians, when long journeys were to be made with the greatest expedition.

FORT LEAVENWORTH, Mo., *May* 14, 1850.

MAJOR:—I have tried the "meat biscuit" and find it all, and more, than the inventor thinks it is.

To satisfy myself, I have lived upon it *entirely*, for several consecutive days, and felt no want of any other food, and I am convinced I could live upon it for months, and retain my health and strength. I thought that although it might sustain life, there would be a craving for more solid food, but it was not so; my appetite was perfectly satisfied. The inventor thinks that five ounces a day will support a man, at a cost of about ——— an ounce. I could not use four ounces a day, made into soup, and nothing added but pepper and salt; and moreover, I found that I could dispense entirely with tea and coffee, which is a great advantage which has not been enumerated. In my judgment, this is a very great discovery, and must lead to important results.

I have long thought that the compression of wholesome food into smaller compass was one of the most important things that remained to be discovered in this age of inventions. Think of a regiment of five hundred men cutting loose from all magazines for two months, with no other luggage train than fifty or sixty mules. At five ounces a day for each man, the weight would be 9375 lbs. which forty-five mules would carry. In military operations, fresh meat would generally be found, and put into the soup, which would make it more substantial, but the men could subsist without it, and it would not be necessary for their health and vigor, to transport *bread* or any other rations.

I have no idea that it will be used to this extent for some time to come, as great

changes must be gradually made, but I am decidedly of opinion that we ought to commence introducing it into the Army at once, and I believe, *for all active operations in the field*, the advantage of this food will be so apparent that it will come into general use in a few years.

I think it will be better to have it always pulverized, and kept in tin canisters to hold about twenty-five pounds.

The inventor had better send me a dozen of these canisters before I march upon the plains this summer. I shall frequently send out detachments on long excursions, and it will be a good opportunity to put this discovery to a thorough test.

Please send this letter to Gen. Gibson, and will you inform Mr. Borden of its purport?

Very respectfully, your obt servt,

(Signed,) E. V. SUMNER,
Brevet Colonel 1st Dragoons.

MAJOR A. B. EATON, *Commissary of Subsistence.*

IT gives us pleasure to state, as we are duly informed, that the General-in-chief of the army of the United States, having great confidence in the judgment of Colonel Sumner, has desired the veteran, General Brooks, commanding at San Antonio, to take measures to have the "meat biscuit" thoroughly tried, and to report his opinion of its value as an article of food, in the cases indicated by Colonel Sumner's trials and suggestions.

This is no more than we should expect from an enlightened officer, like WINFIELD SCOTT; whose merits as an officer of skill unequalled in ours, and unsurpassed in the military annals of any country, are yet in *our eyes* his lesser recommendation, when compared with his varied information, the elevation of his moral character, and a *constitutional* patriotism, bounded only by the boundaries of his country—yes, should his country ever call him to yet higher responsibilities, we hope that the truth will be, and that posterity may know, it was less for his military achievements, than for his civil virtues.

For ourselves, we have no motive to flatter, having nothing to lose, and as little to hope for. Our prayer is, for the downfall of that overweening and unjust influence, which enables England to hold the world in colonial vassalage, and for that purpose compels us and "the rest of mankind," to maintain millions of men, whose only service is to *carry swords and muskets!*

As for Scott, our feeling in what we have said is, how worthless is such a tribute, compared with the services and the virtues of such a man. Nevertheless we use with alacrity, the privilege of paying it, humble as it is.

THE "DUKE'S" ROOM AT WALMER CASTLE.—This *sanctum* is a room of but moderate size, without ornament, and very plainly and scantily furnished, but neat, accurate, and orderly in arrangement; altogether bearing very much the appearance of the single room of a military secretary in garrison. On the right is an ordinary iron camp bedstead, with a single horse-hair mattress upon it; and thereon, whatever be the season, without curtains or any paraphernalia about it, the "Iron Duke" rests when at Walmer. Over the bedstead is a small collection of books, which is seen on a rapid glance to have been selected for use; the best English writers of Anne's "Augustan age," both in poetry and prose; a few recent histories and biographies; some French memoirs; with military reports, official publications, and parliamentary papers, form the little library. In the centre of the room is a mahogany table, well ink-stained, at which, for two or three hours in the day, the master of this room takes his place and plies his pen. Near it is a more portable one, so contrived as to be used for reading or writing while in bed. These, with two or three chairs, comprise the contents of the room, and are sufficiently characteristic of its owner. The window looks out upon the sea, and a door opens upon the ramparts—upon which, a few years ago, the duke never failed to be every morning by six o'clock, and there for an hour or more, take his morning walk. The view from the ramparts, by the way, is a most magnificent one; from the position of the castle, the prospect is unbroken both south and north, while directly in front it is only bounded by the French coast.—*Pictorial Half Hours.*

PROFITS OF FRUIT CULTURE IN NEW-ENGLAND—WHY NOT ENJOYED IN THE FREE TRADE STATES.

Our venerable friend, Mr. Taliaferro, of Virginia, who has held personal intercourse with every President of the *United* States, from Washington to Fillmore, and who has enjoyed the regard and confidence of some of the best of them, lately answered very promptly to a call upon him to supply, for the "Plough the Loom and the Anvil," an account of his method of *making cider*, than which the first Comptroller (who keeps his eyes open and who is a judge of other good things besides cider and oxen,) says *better never was tipped.*

In that communication which "went the rounds of the papers," Mr. T. dwelt emphatically, too much so as we thought, on the substitution of *whiskey* for "Apple jack" and Peach brandy, as being the principal cause of the general decline in the cultivation of fruits and vegetable and flower gardens in Virginia and other Southern Atlantic States.

"The time was," says Mr. Taliaferro, "when *all Virginia east of the mountains, abounded in orchards;* where once was to be seen, [on a single farm] more than a hundred acres covered with fine productive peach trees; *the same ground* is now covered with pine, and other trees of second growth. The cause of the annihilation of our orchards, was the *introduction of whiskey* as a substitute for peach and apple brandy; as to the culture of culinary and flower gardens, as a general matter, we are far behind those operations, in my early times. A goodly number of exotic shrubs and flowers have been added to the old stock. But the arrangement, and especially the cultivation of our culinary and flower gardens is very much inferior to what they once were."

Now we would ask the reader whether, in all countries these are not arts and luxuries that mark and keep pace with the march of civilization and moral culture? and if so, what is the inference to be drawn from the personal and explicit testimony of an octogenarian, whose family, associations and opportunities of observation have been of the best kind, from the days of Washington's Presidency to the present? Going back to the time when gentlemen were in affluent circumstances soon after the revolution, and could afford to indulge in the expense and the luxuries of good gardens and choice fruit, on their own account and for their own sake, without then waiting for remuneration to the sale of the surplus, for which there is now no demand within striking distance.

May not this decline, to which he so conclusively testifies, be attributed to that restless and improvident state of mind, which will always exist where a general decay is going on in men's affairs and prospects, for want of steady and diversified employment for labor and capital? The certainty, or at least the strong hope of adequate reward is essential to forwarding industry and the progress of improvement; and how can that certainty or hope exist, where all, or a very large portion, are engaged in *one pursuit?* Behold how different, as appears by the following extract, is the condition of the fruit grower in Massachusetts, where, by the votes of Southern men, the people were turned from Agriculture to Manufactures. Since that period, her population, from being half that of Virginia, has gone up to a million, after sending forth emigrants to every state in the Union, until now that she excels the old Dominion as much in population, as nature has made her inferior to her, in geographical extent, and yet more in climate and natural resources. Thus, reader, after all you see, "it *is* population that makes the food come out of the ground,"

and the pear to grow upon the tree, and the currant on the bush. Nothing but prejudice or wilful obstinacy can deny the fact. But read what follows:

PROFITS OF FRUIT CULTURE.

The following facts, exhibiting the large profits which may be derived from the skilful culture of fruits, are furnished by S. W. Cole, of Boston, who is a remarkable fact-gatherer, and who remarks, "we give some extreme cases, and others which common skill may compass. The cultivator will do well with medial success."

"Mr. Moses Jones, of Brooklyn, in this vicinity, a most skilful cultivator, set 112 apple trees 2 rods apart, and peach trees between, both ways. The eighth year he had 228 barrels of apples, and in a few years from setting the trees, $400 worth of peaches in one year; and the best part of the story is, that large crops of vegetables were raised on the same land, nearly paying for the manure and labor. The tenth year from setting, many of the apple trees produced 4 or 5 barrels each, the land still yielding good crops of vegetables, the peach trees having mostly gone by old age. Mr. J. grafted a tolerably large pear tree to the Bartlett, and the third year it produced $30 worth.

"Mr. S. Dudley, a very successful cultivator in Roxbury, an adjoining city, sold the crop of currants from one-eighth of an acre, for $108, the next year for $125, and he had good crops for several years. He picked 500 quart boxes from one-eighth of an acre, the next season after setting the bushes in the fall. He had $25 worth of cherries from one Mazzard tree.

"We saw, in Natick, Mass., on the banks of the 'Classic Charles,' on the farm of M. Eames, Esq., an apple tree grafted to the Porter, when 75 years old; it soon bore, and the seventh year it produced 15 barrels, which sold at $30. The original Hurlbut apple tree, produced 40 bushels in one year, and 20 the next. The original Bars apple yielded 60 bushels in one year. N. Wyeth, Esq., Cambridge, in this region, had from a Harvard pear tree 9 barrels of fruit, which sold for $45.

"A farmer would not plant an orchard, thinking he should not live to eat the fruit; his son had the same views; but the grandson planted for posterity, yet his predecessors shared in the fruit also, for the grandfather drank hogsheads of the cider.

"Hovey states that a Dix pear tree, in Cambridge, produced $46 worth of fruit at one crop. We saw in Orange, N. Jersey, 100 bushels of apples on a Harrison tree, which would make ten barrels of cider, than selling at $10 dollars a barrel in N. York.

"Downing says, that the original Dubois Early Golden Apricot, produced $45 worth in 1844, $50 in 1845, $90 in 1846. A correspondent of the 'Horticulturist,' says that Mr. Hill Pennell, Darby, Pa., has a grape vine that has produced 75 bushels yearly, which sell at $1 a bushel. Jas. Laws, Philadelphia, has a Washington plum, that yields 6 bushels a year, that would sell for $60. Judge Linn, Carlisle, Pa., has two apricot trees that yielded 5 bushels each, worth $120. Mr. Hugh Hatch, of Camden, N. J., has four apple trees that produced 140 bushels, 90 bushels of which sold at $1 each. In 1844, a tree of the Lady Apple, at Fishkill Landing, N. Y., yielded 15 barrels that sold for $45."—*New-York Cultivator.*

Now in our belief, the people of Virginia know already, or could quickly learn, as much about raising apples and currants, and pears, and peaches, and apricots, as the people of Massachusetts; but what they need is an equal *motive to learn;* which motive, is to be supplied by an *equal market.* Did they not already know as well as we, we could easily tell them, how to ensure good crops of them all. Have not our humble selves been teaching them that, for more than thirty years? Besides keeping constantly posted up, as to the progress of all that takes place to promote actual improvement in these things in our own country, reading all that is published in books and papers, we have within twelve months, paid not less than $200 for foreign works, and periodicals on agriculture and horticulture, in all their branches, and in various languages; but we might engage to find, in old volumes of the "American Farmer," 25 or 30 years ago, all the requisite information for those who desire to be informed; but what would be the *practical* benefit, even to the few who are deficient in information? The question is, *who is to buy* their pears, and their currants, and apricots, their califlowers, and cabbages, and roses, and lilies, and a thousand things that serve to gratify their wants, and to charm their senses, where abundant and diversified employment serves

at once to multiply the wants of men, and to create the ability to indulge in a thousand things, too delicate and perishable, or too bulky to bear transportation to distant and uncertain markets; along with their three everlasting staples, corn, wheat and tobacco—tobacco, wheat and corn—all to be consumed at a distance; and all carrying off every year the very life-blood of the land, and all subject to numerous charges on their way between the producer and the consumer, *and always at the cost of the former?*

Suppose, in these States, public attention to be turned to the cultivation of fruits and vegetables, where will they find, or how persuade, men to buy that which they themselves are cultivating for sale? One man may lead a horse to the brook, but a thousand men can't force him to drink when he gets there! Hence it is that being driven ourselves once more to look around for bread, and reflecting how we can make our labors useful to that class to whom we have ever been partial, we have deemed it to be a more important duty to teach the land-holder, if we can, how he is to *secure a market* near his land, for the produce of his land, rather than *how he can increase that produce.* Only let him learn how to create the former, and the supply will follow as assuredly as effect follows cause throughout the universe. Let him but force the law-maker to establish a policy that will ensure adequate return in labor engaged in manufactures; such a policy as will lead to the building of furnaces for smelting all his own iron with his own coal; and mills that will ensure demand for his own wool from his own flocks; and coach factories that will create demand for his useless timber; and in a word, the various manufactories for the production of articles now made abroad; when the land-holder has made up his mind to do all this, then, and not till then; will he have customers at hand for his fruits and his vegetables, his milk and his butter, his beef and his mutton. Then, and not till then, he too may have $125 for the currants of an eighth of an acre, and $45 from the fruit of one pear tree, and 100 bushels of apples from another tree, equal to ten barrels of cider, worth $100, and $90 for the fruit from one "Golden Apricot." Reader, we put it to yourself—which do you most desire to be told—how to produce, or how to secure a market where to sell? If in the present condition every farmer in Virginia or Alabama could grow 500 bushels of pears on every tree, or as many of currants on an eighth of an acre, what would he do with them? All would be growers and no buyers! Tell your law-givers, then, to insure reward to people qualified for *other* industries, to come and settle in your State, instead of forever crying "*free trade!*" "*free trade!*"

Potato Flour.—An importation having taken place from abroad of a quantity of farina, or potato flour, the importer requested that it might be regarded in the same manner as wheaten flour, and delivered at the duty of 4½d. per cwt.; but as the article appears to be not only serviceable for food, but also as an important material in the manufacturing process, it was decided to be liable to the *ad valorem* duty of 10 per cent. as a manufactured article, and ordered to be charged accordingly.—*English paper.*

Turning a Prize Pig to Account.—A rather ludicrous story is now going the rounds of the clubs, with reference to a Yorkshire Yeomanry Corps. The other day at York, while a captain was inspecting his troops upon the parade, he observed one of his men decorated with a medal. "Holloa, my lad!" exclaimed the captain, "I did not know you were ever in the Regulars. What action did you serve in?" "Lawk, sir," replied the Yorkshire trooper, "I was never in t' wars, not I; but my old sow won this at the Thrisk Cattle Show, so I pops him on t' my breast, thinking how it looks warlike."

Sale of Horses.—The exportation of horses this year from Ireland to England has been unparalleled for a number of years. Mr. Dawson sold a lot of seventeen first-class hunters to Mr. Murray, of Manchester, for the enormous sum of two thousand three hundred pounds*, a price for a "lot" from one dealer to another without precedent in this country.

* $11,500, or $676 for each horse.

WOOL AND WOOLLEN FACTORIES IN TEXAS.

"The first woollen factory in Texas is just going up on the banks of the San Antonia river. The proprietors intend to manufacture the coarse woollens, which they will furnish cheaper than they can be imported. The San Antonio and San Marcos rivers abound with favorable sites, and an inexhaustible quantity of water power. The country is admirably adapted to the raising of sheep. All articles of food are cheap, the climate mild, and every thing is in favor of the new enterprise."

It is with infinite pleasure that we place before our readers the above from the "Providence Journal," in evidence that the people of Texas are opening their eyes to the importance of bringing the loom and the anvil to take their places by the side of the plough. We have just seen that ship-load after ship-load of immigrants are embarking in Europe *for Texas;* and this is the policy that will swell the tide of immigration. The country that thus *diversifies* employment, will always attract the foreigner, and elevate those whom it attracts. Of all the portions of this country, there is none more admirably calculated for *wool-growing* on an extensive scale, than that in which we have now to record the commencement of the first effort at making a market on the land for the products of the land—the first at least that has met our notice.

The recent exploration of the Rio Grande, the report of which by Major W. W. Chapman, to General Jessup, has been recently published, shows, that at a trifling expense, that river could be made navigable for *fourteen hundred miles;* bringing into activity a vast extent of fertile land, as well as an extensive pastoral country, peculiarly adapted to sheep cultivation.

"There are," says the report, "many fine mill sites on the streams, and nearly all have excellent water power. They abound with perch, and the regular speckled trout of our northern mountain streams. Captain Love says, that he frequently saw herds of black-tail deer, numbering two or three thousand. He also saw immense droves of wild horses and cattle. He describes this country as the finest in the world for grazing, and believes it capable of sustaining *almost any given number* of sheep and goats. From the mildness of the climate, sheep in this region, and, in fact, along the *whole valley of the Rio Grande to its mouth*, require no sheds during the winter months—and it is also unnecessary to cut hay for them, as they can *graze the entire year.* The sheep along the valley of the Rio Grande seem to be free from the diseases so common at the North. From this fact, the small expense in taking care of them, and the first cost, (about fifty cents per head,) this will become a very lucrative business.

"There is an extensive mine of bituminous coal on the Texas side, about 12 miles above Fort Duncan."

While the peculiar advantages of Texas for sheep husbandry are thus brought to light, facts have been exhibited in the "Plough, the Loom and the Anvil," by the kind agency of Mr. Browne, of Philadelphia, in reference to the *quality* of our wool, which demonstrate that of all countries in the world, there is none in which the sheep thrives better, or *yields a finer fleece*, than our own. This will be proved by samples which he will send from five different States, to John Bull's great Industrial Convention in London, designed to humbug the world and to induce it yet longer to look to England as the great workshop of the world. In the meantime our woollen mills are being closed, and the production of wool is declining, because our farmers refuse to take *for themselves* the protection, by aid of which they would be enabled to bring to their sides millions of European women and children, who would drink their milk and eat their corn and potatoes, while engaged in converting their wool into cloth. Our government furnishes ships to aid in making up the great museum, which John Bull is now opening

for the purpose of bringing the people of the world to eat his potatoes and cabbages, and buy his wares; but it refuses its aid to the farmers and planters of our own country for bringing the now almost starving paupers of Europe to eat the potatoes and cabbage grown at home! We trust, however, that the time is not far distant, when those farmers and those planters, will awake to an understanding of the fact, that nations that *export raw produce, must always impoverish both their lands and themselves!* and that the only road to perfect freedom of trade, lies through that perfect protection, which enables the manufacturer to take his place by the side of the agriculturist—as recommended by Mr. Jefferson, in 1816. So almost limitless is now the expanse of our country, that one-half of it does not know what the other is about. How few know that from *Point Isabel*, the shipping port for the immense valley of the Rio Grande, *steam-ships are already plying weekly to New Orleans*, say about seventy hours' run, thus affording a market for their sheep! Truly, what a great country ours would be, could we one and all resolve to be no longer, as General Jackson said, "*subject to the policy of British Merchants.*"

VIRGINIA AND ITS NATURAL ADVANTAGES.

The Virginia Central Railroad.—A meeting was held in Richmond, (Va.) on the 1st instant, to take into consideration the extension of the Virginia Central Railroad from Staunton to Covington. A preamble stating that, whereas, by an act passed at the last session of the General Assembly, the capital stock of the company was increased to the sum of $700,000, three-fifths of which are to be paid by the State, when two-fifths are raised by fothers than the Commonwealth, was followed by a resolution, unanimously adopted, that the city of Richmond ought to subscribe at the proper time the full proportion of the said three-fifths.

We rejoice in every new evidence, that the ancient dominion—the mother of States—is awaking to the importance of bringing into activity its vast internal resources. Of all the States in the Union, their is not even a single one possessing the advantages of Virginia. Coals, iron ore, lime, marl, and water power abound, and she has facilities of intercourse through her extensive territory, exceeding those of any other, and would her farmers and planters but unite their efforts with those of Pennsylvania and the North, for the adoption of measures to enable them to draw to their sides consumers of their products, she would speedily resume that place among her sister States, to occupy which she was destined, and which she would now be sure to occupy, had her leaders been a little more practical and a little less addicted to abstractions. The same paper that informs us of this effort for the making of railroads, likewise informs us that her mines, her furnaces, and her mills, are being closed, and that instead of increasing the market on her land for the products of her land, she is diminishing it from day to day. We entreat our Virgina readers to mark the fact, that the closing of mines and furnaces tends to compel miners, and furnace-men to seek the West, there to become farmers, and to drive their present customers into the position of rivals. She can compete with the world in the production of wool, of woollens and of iron, and she will do so whenever she shall come to be considered that General Jackson was right when he said that "we had been too long subject to the control of British merchants." She needs a new declaration of independence, and if Washington, Jefferson, Madison, or Monroe, were at the head of her affairs she would have it.

March of Intellect.—An eminent auctioneer had lately an estate under the hammer, and after enumerating its qualities for agricultural purposes, he added:—"It presents its fertile bosom to the orb of day, and drinks up the solar fire."

ON RAISING AND BREEDING SWINE FOR THE BRISTLE.

BY P. A. BROWNE, LL. D.

Of Bristles.—The word "bristle" (*bristl*, Sax.) is defined, "the strong hair which grows and stands upright [but it does not stand upright or at right angles] on the back of the boar, &c." The French call it "soie," *poil long et rude du cochon, du sanglier*, etc. But *soie* also means silk, and therefore this name is improper.

Of the Hog.—Aristotle (who divided quadrupeds into three kinds, viz: those with the *hoof entire*, those with a *cloven hoof*, and those with *claws*) was at a loss where to place the hog, on account of some being found in Illiria with the *hoof entire*, and of an opinion, then prevalent, that there were others to be seen, in some places (but where is not mentioned) with *claws*. In regard to the *solipede* hogs, they are noticed by Linnæus (sus ungulis simplicibus) and are said to have once been known in some part of England,* and still to be in Upsal, in Sweden; but the variety with *claws*, if they ever did exist, is not now known.

Linnæus places the hog in his 5th Order, *Jumenta*, No. 28, "*Sus*," of which he furnishes descriptions of four species; but three of them have been since transferred to other orders. It is well known that neither Buffon nor Goldsmith paid much attention to classification; but Cuvier and his followers put this animal in the order *Pachydermata*,† in the second family (of ordinary pachydermas) in which there are five genera, viz: the hippopotamus, the hog, the rhinoceros, the damain and the tapir. The Genus Hog (sus) is divided into three species, 1, the hog proper; 2, the phacochæres; and 3, the peccary. We shall, at present, confine our remarks to the first of these species.

The wild boar and the domestic hog breed freely together; and therefore, the latter is generally believed to have descended from the former.

There are a great many varieties of the hog; Linnæus mentions five, but the author of Illustrations of Natural History enumerates twenty-three.

The hog has two canine teeth in each jaw, which project from the mouth and incline to each other, four to six superior, and six inferior incisors, and twenty-four to twenty-eight grinders; those of the latter, at the bottom of the mouth, having tuberculous crowns, but those nearer the front being more or less compressed and cutting. This dental disposition shows that the animal is *less herbivorous* than some others of his order. The hog never sheds his teeth, like some other animals. His head is large, keel-shaped (carinatus) and hornless, the snout long. the eye small, the stomach large, but *single* (which accords with his being a *non ruminant*.) He has four separate toes; but walks upon two of them only, his skin is thick and his tegumentary appendage is *hair* of different varieties, according to the different breeds, climates and nourishments. The number of tits of the female are said to be ten or more, and not to exceed twelve; but we are assured by breeders that they often exceed the last number. She has from fifteen to twenty pigs at a birth, litters twice a year, and has been known to do so even thrice in fourteen months.

The *fat* of the hog forms a thick layer between the flesh and the skin, and is very voluminous; consequently his sense of feeling is obtuse, but he enjoys the senses of hearing and smell in a good degree, and in his wild state is said to be very delicate in his taste;‡ but when domesticated, becomes a filthy glutton. He is naturally inactive and drowsy, but liable to be excited by storms of wind and the distressing cries of animals. The general limit of his life is from fifteen to twenty years. The Israelites are forbidden to eat this animal. "And the swine, although he divide the hoof and be cloven footed, yet he cheweth not the cud; *he is unclean to you.*" (Lev. ch. xi. v. 7.)

The Mahometan is prejudiced against eating hogs' flesh, but most other people find it a pleasant, substantial, and nutritious food. Pork takes salt better than any other flesh, and consequently it always makes an important article in naval stores. The fat of the hog, or lard, is used as a burning fluid, and in various culinary and medicinal preparations; the skin is used in manufactures, the hair for stuffing mattrasses, cushions, &c., and the bristles are indispensable to the saddler, the shoemaker, the painter, and brushmaker.

Many essays have been written to encourage the breeding of the hog, for his *flesh* and his *fat;* but this is the first attempt to recommend *the breeding of swine for the* BRISTLE.

No one, unless he has bestowed particular attention to the subject, is aware of the large quantity of bristles that are used in the United States. No true American but will regret to learn what a large proportion of these are *imported from foreign parts.*

* See Illustrations of Nat. Hist. † Thick-skinned. ‡ Of 243 plants he eats 72 only. (Lin.)

By correct information obtained from the Registrar's Office of the Treasury Department, we find, that during the last five years, there have been imported into the United States, an annual average of 383,264 lbs. of bristles, worth $174,311.

We maintain, and hold ourselves ready to show, that instead of this, *we ought to supply ourselves with bristles and export them to foreign countries!*

It will not be denied that the principal properties for which a bristle is esteemed, are,

1st. Its length.
2d. Its thickness.
3rd. Its strength.
4th. Its ductility.
5th. Its elasticity.

These properties are possessed and combined in various degrees in the bristle of different breeds of swine; and, as all know, that by a judicious breeding of sheep, the fleece may be improved in all these respects, so one can find no difficulty in understanding that, by similar care and attention in *breeding and raising the hog, the bristles* may be improved in almost every degree that the farmer may desire.

But here we are met with an objection which is not well founded, but which is formidable, (because of its plausibility), to those who have not paid much attention to the subject, viz., that in endeavoring to improve the bristles we will injure the flesh and the lard. Now, we do not pretend to deny, that the production of an *immense amount of fat may* injure the quality of the bristle; every ounce of *abnormal* adipous tissue is so much abstracted from the tegumentary appendages; but when we consider that superabundant fat, if it be not an actual state of disease, is something very much like it, we will not be so apt to regret that it is curtailed within due bounds; especially if we are repaid for the loss of it, in a valuable bristle. Besides, bristles of *great softness*, although not remarkable for length or thickness are imported for paint brushes, and what objection can our opponents have to breeding hogs for these bristles? Recollect that *softness* depends upon ductility and elasticity, and examine the Pennsylvania bristle, No. 1. for these qualities.

We have in our collection of pile seventeen varieties of bristles, which, being classed according to their *length*, rank as follows:*

	Length.
1 The Russian domestic hog, No. 1,	12½ inches
2 The French do do do	12 "
3 The Russian wild boar,	9½ "
4 Another French, No. 2,	8½ "
5 The Russian O.Katka, No. 1,	7½ "
6 The Pennsylvania, No. 1,	7 "
7 The Ohio, No. 1,	6½ "
8 The Pennsylvania, No. 2,	6 "
9 Another Russian O.Katka, No. 2,	6 "
10 Another Russian domestic, No. 3,	6 "
11 The German, No. 1,	5 "
12 The Pennsylvania, No. 3,	5 "
13 Another Ohio, No. 2,	5 "
14 Another Ohio, No. 3,	4½ "
15 The Pennsylvania, No. 4,	4 "
16 Another Ohio, No. 4,	4 "
17 The Flanders,	4 "

The first observation worthy of remembrance is, that the longest bristle is from a hog of *domestication;* and, it is probable that the Russian domestic hog is derived from the wild boar of that country, that the bristle has improved in length three inches by the care and attention of man.

In the next place, we find the longest bristle is 12½ inches, and the shortest is 4. The longest bristle in the United States, (Pennsylvania No. 1, which is 7 inches,) to reach this ultimatum, must be increased 5½ inches; but it already exceeds in length the shortest foreign bristle (the Flanders of 4 inches) by 3 inches. There is no doubt, therefore, that, *in breeding for length of bristle*, by simply selecting, for breeding, those hogs only which have the longest bristles, we can cause our bristles to ascend in the scale of length, if not arrive at its summit.

In ranking our seventeen specimens according to their *thickness*, we have the following table:

	Diameter.
1 The Ohio, No. 1,	1.45th part of an inch,
2 The Ohio, No. 4,	1.68 "
3 The Ohio, No. 3,	1.68 "
4 The Pennsylvania, No. 2,	1.68 "

* Full table of all these properties will be introduced into our book on hair and wool.

		Diameter.
5	The Russian O.Katka,	1.68th part of an inch.
6	The Pennsylvania, No. 3,	1.79 "
7	The Pennsylvania, No. 1,	1.79 "
8	The French,	1.79 "
9	The Russian wild boar,	1.80 "
10	The Pennsylvania, No. 4,	1.90 "
11	The Ohio, No. 2,	1.90 "
12	The German,	1.90 "
13	The Russian, No. 3,	1.90 "
14	The French, No. 1,	1.90 "
15	The Russian domestic, No. 1,	1.60 "
16	The Flanders,	1.145 "

Here we find that the Ohio No. 1, (which ranks only 7 in the scale of length) takes precedence of all the rest in this table; being twice as thick as the Russian domestic No. 1, (which so much outmeasures it in length) Here is then a fine breed to work upon, when desirous of increasing the *thickness* of the bristle.

The next table to be constructed is one of *strength*, of one inch fibres, in which the principal specimens rank as follows:

			Grains.
1	The Russian O.Katke	broke with	38·263
2	The Ohio, No. 1.	"	35.874
3	The French, No. 3.	"	35 397
4	The Pennsylvania, No. 1.	"	23.984
5	The Russian, No. 5.	"	18.354
6	The French, No. 1.	"	17.000
7	The Russian wild boar,	"	16.012
8	The Flanders,	"	11.624
9	The Russian, No. 1.	"	10.000
10	The German,	"	5.576

Next to the O. Katke, the Ohio, No. 1, is the strongest bristle in our collection. It is more than twice as strong as the Russian wild boar; three times as strong as the Flanders, and more than six times as strong as the German.

The following is the table of *ductility* of one inch:

			Grains.
Pennsylvania, No. 1.	stretched	63.90 with	23.984
The Flanders,	"	43.90 "	11.205
The French, No. 1.	"	30.90 "	17.000
The French, No. 2.	"	28.90 "	31.901
The Russian, No. 5.	"	25.90 "	18.354
The Russian wild boar,	"	22.90 "	14.264
The Russian O.Katke,	"	10.90 "	34.624
The Ohio, No. 1.	"	4.90 "	34.124
The German,	"	4.90 "	4.266
The Russian, No. 1.	"	2.90 "	9.500

In ductility the Pennsylvania, No. 1. stands pre-eminent, one inch having stretched to the length of nearly one inch and three-fourths.

The table of elasticity, of one inch.

		Grains.
The Ohio, No. 1.	lost none of its elasticity with	34.124
The Russian No. 1.	lost none of its elasticity with	9.500
Do. do.	5. lost none of its elasticity with	14.858
The German lost	2.90 " "	4.266
The O.Katke lost	3.90 " "	34.624
The Russian wild boar lost	10.90 " "	14.264
The Penn., No. 1. lost	19.90 " "	22.236
The French, No. 2. lost	28.90 " "	31.901
The French, No 1. lost	30.90 " "	17.000
The Flanders, lost	30.90 " "	11.205

Here again the Ohio, No. 1, is first upon the list, notwithstanding its great diameter and the weight that was applied. It is true that its ductility was only 4, but the German with the same ductility lost 2 of its elasticity.

Upon the whole, then, the bristles of the United States, stand high in good qualities, and may easily be improved, so as to compete with any in the world.

THE LAFAYETTE CATTLE SHOW IN MARYLAND—26 YEARS AGO! AND THE LAST EXHIBITION OF THE MARYLAND STATE AGRICULTURAL SOCIETY—WITH SOME REMARKS ON BOTH.

BY THE EDITOR OF THE "PLOUGH, THE LOOM AND THE ANVIL."

The time of the last Fair at Baltimore, exactly completed twenty-six years, since the one held at the Maryland Tavern, four or five miles out, which we call the Lafayette show, as it was postponed a month, for the sake of the attendance of the "Nation's Guest" at that time. The writer of these lines who was honored with his personal friendship and confidence, to the day of his death, having ascertained that, although it would be particularly gratifying to him to witness such an exhibition, previous engagements would render it impracticable to do so at the time which had been named, and it was accordingly postponed to meet his convenience. And well does the Editor of this journal remember the earnest asseveration of the old General, that, of all the numerous gatherings to receive and welcome him, none could be more congenial to his taste and feelings, than was the assemblage of the Farmers and Planters of the old Maryland line, to take him by the hand, and to exhibit to him the fruits of their agricultural and household industry, and to let him observe their then semi-centennial progress under the free institutions for which he, shoulder to shoulder, had fought and conquered with their Fathers of the Revolution.

Of the last Fair, of the same kind, at Baltimore, after the lapse of another quarter of a century, a full and clear account will be found, in that "same old coon" of a paper, the "American Farmer," which ought to be, if it be not, on every farmer's table, since it might be there for less than a bushel of wheat.

As the particulars of all such Fairs are comparatively of local and State interest and competition, rather than of National concern—and as most of our readers, within the sphere of those who took part in it, will have already seen the official account of them, in that excellent Journal—instead of repeating them here, it occurs to us that it may possibly prove more acceptable, if only as an incident of agricultural history, to reproduce, after a lapse of twenty-six years, what then transpired in the same cause, and on the same theatre. Mingled, it may be, with some reminiscences of a mournful cast, this resurrectionary account of what was then doing, accompanied by the venerated names of the actors then upon the stage, may serve to call up some pleasing remembrances in the minds of the few—alas! very few—who survive, not alone their companions, but it may be all public remembrance of those men and those times. Nor can it be supposed that such a recurrence to times and incidents long passed, will be any the less attractive for the descendants of the many who have been finally summoned from the field of their usefulness. Descendants and friends of Ridgely, Smith, Howard, Harper, Oliver, Thompson, Caton, Coxe, Somerville, Cooke, Kent, Emory: alas! how many might be added to the roll, could it serve to express the reverence due to their memory, or lend force to their good examples.

Nay, we should be tempted, if we had room now, as we may possibly have some day, to republish the full reports of the Committees at the Fair of 1826, in the persuasion that it might be useful in affording some means of better judging of the "advancing state of agriculture," complacently spoken of on this occasion. It would show how far we have advanced in productiveness since the premiums then awarded

To James C. Gittings for 3 tons 12 cwt. of Hay to the acre, on 20 acres.

To John Mercer, for 631 bushels of *Parsnips* on "rather less than an acre."

To Ditto, for 675 bushels of Carrots on "rather less than an acre."

To Robert Oliver, for 640 bushels Rutabaga per acre,on 6 acres.

To Robert Carnan, for 75 bushels and over, of Corn, per acre, on 7 acres, 1 rood and 39 perches.

To David Williamson, for 301 bushels 31 quarts of Corn, and 371 bushels of Potatoes, on 6 acres, 1 rood and 12 perches.

To Michael Bartholomew, for 5 hogsheads Tobacco, 3966 lbs., sold for $31.80 per cwt. $1,257.20.

Second prize, to T. B. Dorsey, for 5 hogsheads Tobacco, 3653 lbs., sold for $30.75 per cwt. $1,124.45.

BALTIMORE, *Friday, November* 26, 1824.

THE WESTERN SHORE CATTLE SHOW.

The editor's attention has been so much engrossed during the week by the Agricultural Exhibition, that he has found it impossible to prepare a detailed and satisfactory account of it.

The first day of this grand annual farmers' festival passed most happily. The weather was uncommonly fine, and the display of all sorts of domestic animals—specimens of crops, butter, domestic wines and household fabries, &c., &c., altogether far exceeded any thing hitherto witnessed. The conviction of the great utility of these public agricultural displays, seems now to have taken fast hold of the public mind, and to pervade so extensively every part of the state, that gentlemen were attracted to this one from the most distant points. Not less than fifty horses of superior quality, and of different ages and classes, passed under inspection. Nearly one hundred neat cattle; a great number of sheep, and the pens for swine were so filled that it became necessary to erect many more after the exhibition commenced. Unexampled improvement was observed to have taken place in this class of animals. The great satisfaction expressed by all, enables us to congratulate the state on the permanent establishment of these shows, and the number of sales of stock of improved blood, evinces, that to them the farmers will look hereafter as to a common market, where domestic animals of the highest grade of excellence will be sold and bought, and their blood diffused throughout the country.

The second day was occupied in the examination of household manufactures, which were ten times more various than at any former exhibition, and were much admired by the ladies who attended to inspect and encourage them.

The samples of butter were more numerous than heretofore, and the quality will be proclaimed in the reports of the judges. The ploughing matches, with oxen and horses, were well conducted, though on ground rather unsuitable, but

The third day, was above all interesting and honorable to our Association, as it was distinguished by the arrival and the good offices of the "Nation's Guest" himself, who came to give by his cheering and gracious presence, a spur to these peaceful conflicts of the plough, which, beginning in a spirit of generous and patriotic emulation, invariably tend to the promotion of the public welfare. General La Fayette, accompanied by the Honorable Robert Smith, president of the society, arrived on the ground about eleven o'clock. He was escorted to the field of exhibition by Governor Sprigg, at the head of a detachment of his well disciplined volunteer cavalry, and was accompanied by his estimable son, and secretary, by the mayor of our city, and the committee of arrangement; by W. W. Seaton, Esq., on the part of the corporation of Washington; by Governor Barbour, of Virginia; Governor Dickerson, of New Jersey; Dr. Kent, of the House of Representatives; and Col. Emory, of the Executive Council; with many members of the legislature of Maryland, and an honorable and numerous body-guard of *substantial sunburnt farmers.*

On his entrance, a long avenue was formed by the members, through which he passed to the head of the enclosure, where plain and suitable arrangements had been made for his accommodation.

In a short time General Harper, by appointment of the society, rose and delivered a very able, eloquent, and highly instructive, and gratifying, practical address; when he finished, the chairmen of the several committees came forward and read their reports, and the fortunate competitors being called, appeared, and passed through a large circle, formed by the members, to receive the trophies of their industry and skill, from the hands *of the gallant, the disinterested soldier of liberty, the veteran companion of Washington,* and the unvarying friend of America.

It would be difficult to define the impression made by this part of our ceremonies, as it would be to anticipate and describe its salutary effects, in favor of the general husbandry of the state, and the particular objects of our institution. Here, for once at least, Agriculture saw her importance recognized, and her dignity confirmed,—more than five hundred of her hardy sons, beheld the very man, the same La Fayette, whose disinterested patriotism and chivalrous sacrifices* by the side of their fathers, in the cause of American freedom, is associated with all they know of their country's independence—there he stood, full in years, yet fuller in virtue, as if waking up from the slumbers of half a century, through which a benignant Providence had preserved him, to realize the vision of his immortal compatriot, *Franklin!* and to contemplate with benevolent delight, the increase of his countrymen in numbers, and in strength; enjoying all the means of national happiness, and all the resources of national power and safety—appearing amongst us now to give his benedictions, especially to the *plough*, and to receive the benedictions of those, who now, more than ever, will be proud to follow the plough. It was, altogether, a spectacle so fascinating, so impressive, so productive of strong and interesting emotions as we can never hope again to witness; how striking was the mixture of alacrity and diffidence, of pride, and of reverence, with which every one stepped forward to receive his premium, with the smiles and the good wishes of one of the noblest champions that ever drew his sword in defence of human freedom! Let then, these premiums be inscribed "By the Agricultural Society through the hands of *La Fayette*," and let them be handed down from generation to generation, to be cherished yet more and more, until the time shall arrive, which God forever postpone, that the American farmer shall cease to sing at the tail of his plough, of Liberty and La Fayette.

After the delivery of the premiums, the farmers on the ground, at the invitation of the editor of the American Farmer, formed themselves into two lines, between which the General passed, most graciously shaking each one by the hand; and then, he was invited to a seat at the head of the table, on the right of the president of the society, supported by the Mayor and Doctor Kent on his right; and on the left of the president, sat the orator of the day, Governor Barbour, of Virginia, Col. Emory, and other practical farmers of distinction, whose presence gave countenance and encouragement to the views of our association.

It was a source of regret that Col. Powel, corresponding secretary of the Pennsylvania Agricultural Society, who had on this, as on previous occasions, favored us with his company and his judgment, was compelled by other engagements to leave vacant the conspicuous seat which had been assigned him.

The dinner, provided by Messrs. Watson & Harrington, was substantial and excellent, doing credit to them and giving universal satisfaction.

When the dinner was over, the following toasts, prepared by a committee appointed for that purpose, were announced by the President, and repeated by George Cook, Esq. and by Col. J. G. Davies, from the centre and the foot of a table calculated for 250 people.

1. *Our Country.*—A store-house to which the world may resort, for the seeds of republican institutions, national independence, and private virtue.

2. *Our Country's Father.*—His first care was given to his country's safety — his second to its cultivation.

3. *Our Country's Friend.*—the Nation's Guest—Like Washington and Cincinnatus, he beat his sword into a plough-share, and when it was no longer wanted for the defence of liberty—*with thirteen cheers!*

Whereupon, Gen. La Fayette rose and said, that in his double capacity of an American patriot and a practical farmer, he had the most affectionate acknowledgments to proffer for the honors and gratifications conferred this day upon him. He begged leave to propose the following toast:

The seed of American liberty, transplanted on the other shore, oppressed, not destroyed, by every sort of European weed—may it rise again, vigorous, and pure, and cover the soil of both hemispheres.

4. *The President of the United States:* he has done a good day's work. The flock which he has tended has increased and multiplied, and its condition is his pride and his reward.

5. *The Plough, the Loom, and the Ship:* all indispensable for prosperity; the first for existence.

* In a late agricultural excursion to the eastern shore of Maryland, the Editor had the happiness, to make by invitation, a visit to the residence of Mrs. Tilghman, relict of Col. Tilghman, one of the favorite aids of Washington; when this venerable matron of the Revolution, full of grace and affability, and rising in the respect and affection of her friends as she declines in the vale of life, showed him the original letter of introduction, brought by Gen. La Fayette to Col. Tilghman, from Mr. Carmichael, then Secretary to our Commissioners in Paris, wherein he commends him to his best attention, as a young nobleman of the first family and the best prospects in France.

6. *Roads and Canals:* which increase the products of industry, by bringing the farm, the workshop, and the wharf, nearer together.

7. *Household Manufactures:* The National Savings' Bank, where all the scraps of industry are collected and turned to account.

8. *The Ox:* Most useful in life, at the smallest cost, which he repays at his death.

9. *The Cow:* The best emblem of abundance, which she contributes most to create.

10. *The Sheep:* Which supplies our best clothing, while he is preparing our best food.

11. *The Farmer of La Grange:* Let the gratitude of the sons of his fellow-laborers in the field of our revolution, secure to him a rich harvest of renown from the seed then sown.

12. *The principles of Free Government:* The light gleams through the night of slavery, and will increase to perfect day.

13. *Woman:* Heaven's best gift here below; the Farmer's toils, like the dangers of the soldier, and the statesman's cares, are sweetened by her smile, and rewarded by her affection.

VOLUNTEER TOASTS.

By Gen. La Fayette: The Maryland Farmers; the ploughshare, into which their swords, after the revolution, had been turned, became again in the last war, a victorious sword.

Governor Barbour next rose, and after a few appropriate remarks, delivered in his own impressive and eloquent manner, thanking the society for their kind attentions, and declaring the peculiar pleasure which he always finds in the company of those, who, like himself, rely for their support, exclusively, on the cultivation of the soil, gave,

The Agricultural Society of Maryland: May its liberal example be an object of universal imitation.

By Capt. Jacob Hollingsworth: The President of the Board of Trustees of this Society; Gen. Charles Ridgely, of Hampton, whose absence, and yet more, his indisposition, we all regret.

By the Orator of the Day: Brother Jonathan's three daughters, Agriculture, Manufactures, and Commerce; Let not the first-born, who nursed her younger sisters, and feeds the whole family, be neglected by their father.

By the Editor of the American Farmer: The ladies who sent their beautiful manufactures to our exhibition; of such it may be said, as of the virtuous woman in holy writ, "she looketh well to the ways of her household; and eateth not the bread of idleness."

By James Howard: Our distinguished agricultural guest; our country has richly profited by his practical knowledge of the *drill* system.

By the same. *George W. La Fayette:* The patriotic son of a patriotic sire; like will produce its like.

By G. W. La Fayette: The favorite motto of American and French farmers—Liberty.

By W. C. Somerville: Our government; May she always keep the beams of our ploughs, the beams of our ships, and the beams of our looms in motion; never forgetting that ploughs, ships, and looms are like the sun, which, when shorn of his beams, sheds "disastrous twilight" on a nation.

By an officer of the Society: Col. J. H. Powel, whose excellent knowledge, like his excellent stock, is diffused through the country for the improvement of its best interests.

By Mr. Chubb, of Richmond: Our mother earth; like fair woman, the source of our greatest joys, if treated with tenderness and attention.

By James Howard: Mr. Le Vasseur; "*Noscitur a soiics.*"

By Mr. Le Vasseur:—Preceded by brief and pertinent remarks, in the French language, interpreted to the company by his companion and friend, G. W. La Fayette, expressive of his thanks and gratification at the civilities which were here, and every where extended to him as the friend of Gen. La Fayette—The Maryland Farmers, who know how to use the sword as well as the plough.

By H. V. Somerville: Agriculture; the favorite pursuit of Washington and La Fayette, who like Regulus of old, preferred the cultivation of their farms, to the command of armies.

By H. Schroeder: Liberty, genuine rational liberty; may the universe become its temple, and the heart of every man its altar.

By Isaac Munroe: The presidential ploughing-match; let the best ploughman have the premium.

By J. S. Williams: The products of the seed which our guests assisted to sow in our Revolution, they have well repaid his labors.

By Robert Riddle: Agriculture, ancient and honorable; productive of peace, independence and plenty; its pursuits are alike innocent, useful and happy.

By D. Jenifer: The State of New-York; in internal improvements, may the State of Maryland follow her example.

Agriculture's friend, *De Wit Clinton:* at whose command mountains melt away, rivers turn from their accustomed channels, and plenty, from her copious horn, poureth abundance over the land.

By W. F. Redding: The foreigners who, in '76, helped our fathers to beat and drive off the mischievous *Bull*, that broke into our national inclosures, to gore our people, and eat up their corn. Friends in *need*, are friends *indeed.*

By the Society: Mr. Coke of Holkham; the friend of farmers, the friend of Americans, and the friend of mankind

By E. H. Cummins: The Maryland Agricultural Society, patrons of the noble art; that rejoices rather in creating, than destroying, the comforts of life.

By G. W. Warfield: General La Fayette, second to Washington in the hearts of our countrymen; may he live to see his beloved France as free and as happy as he now finds his children in America.

By G. Howard: Commodore Porter; ready and able, with pen or sword, to adorn the literature, and defend the honor of his country; called now to plough the ocean, he cannot as heretofore, award the premiums for ploughing our land.

The memory of Col. John Taylor, of Virginia, the great American Orator.

By J. S. Skinner: General S. Van Ransellear; his heart leads and his means freely follow, in the ways of public usefulness.

The following was offered as the parting toast by Dr. Grafton Duval, of Frederick—*Speed the Plough.*

The company then separated with a general sentiment of gratification and good wishes for the success of the society.

Early in the evening the General visited the theatre, to witness the performance of the favorite play of General Washington, the "School for Scandal," and never was play better performed. All exerted themselves to please, and all succeeded. Mr. Warren, in Sir Peter Teazle, was great in the great point, in which great playing consists: *he was exactly true to nature.* When the point of the play was developed in the screen scene, the General wtih his suite, retired to meet a large part of ladies and of agricultural gentlemen, who had been brought together for the occasion, at the house of the Editor of the "American Farmer,"* and afterwards visited at the residence of R. B. Magruder, Esq., the daughter and family of his old companion in revolutionary scenes: General Stricker, the soldier of two wars, and the patriot of all times.

Thus passed the day ever memorable hereafter in the annals of agriculture, as having been dedicated by American farmers to the entertainment of the Farmer of La Grange.

It was not until an hour since, that we could take pen in hand to give even this hasty record of its incidents, and as it was necessary to transcribe all the volunteer toasts, allowance is solicited for its imperfections, both in substance and details.

On the Cultivation of the Melon in France.—The finest kind of this fruit is the Cantaloup, and is brought to great perfection in the environs of Paris, where it is produced in immense quantities. It is covered with tubercles or warts, from which appearance the French give it the distinctive *soubriquet* of "Melon *galeux.*" This delicious fruit, averages 7 or 8, or even 10 lbs. in weight, and exceeds 2 feet in circumference. The finest Melons could be bought in Paris this season for 15*d.* and 20*d.* The method adopted by the best growers near Paris, among whom may be named Messieurs Francois and Decouplé, is as follows: When the young plant has formed its second or third leaf beyond the cotyledon, the stem is pinched off, or "stopped." The effect of this is to make it throw out two lateral branches, which again are stopped beyond their sixth or seventh leaf. The plant now comes into bloom, and as soon as the fruit is set, two, or at the most three, are selected as the most promising, and all subsequent ones are pinched off as they form, so as only to have this limited number on one plant, to preserve its vigor and increase the sap. The seeds of this Melon are found to vegetate, even when transmitted to the East and West Indies, taken from the fruit as brought to table. They should be merely wiped and dried, but not washed. The French gardeners follow the same system in growing the immense orange-colored Pumpkin, or "Potiron," so extensively used to make vegetable soup on "meagre days." When is desired to produce very large Pumpkins, only one fruit is retained on each plant, all the others being suppressed. It may be well to mention, as the result of careful observation, that the climate of Paris enjoys a far greater portion of solar heat and light than the meridian of London.—*B. C. H., London, Sept.* 11.

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* The present Editor of the "Plough, the Loom, and the Anvil."

THE LAST FAIR OF THE MARYLAND STATE AGRICULTURAL SOCIETY.

Proposing to return again to the last exhibition at Baltimore, with a view to such comments as we may suppose to be of sufficient concern to the general reader to warrant it; it must suffice now to say, that it was the unanimous and gratifying impression that it far exceeded its predecessors, in the number of people in attendance, the number and quality of domestic animals, implements, &c. As to cattle, the presence or absence of Mr. Patterson's unequalled herd of Devons would itself make a very wide difference. How far this exhibition proved the existence of a wider spread and deeper resolution on the part of the *mass of Maryland Farmers* to compete in future—how far it evidenced a more extended knowledge of the true foundations of sure and progressive and general advancement in agriculture, and of any *systematized and reliable determination* on their part, to "unite," as was "resolved" on, to secure such advancement, by the adoption of measures to ensure legislative respect to authorized statements of their grievances, and to put in force the only adequate means and influences that *can* secure the rights and prosperity of agriculturalists, to wit: *appropriate legislation and appropriate education* for their children—is another question—one which every one must answer for himself. Of this last mentioned disposition, the most promising sign which came under our notice, was the unanimous adoption of the following Report of a Committee distinguished alike for well known zeal and intelligence. The little work to which it refers is undoubtedly one that ought to be placed in the hands of *every Teacher and of every Farmer's son in the Union*, whether in school or out of it; while the very slowness with which it is called for, is enough to awaken the fear, that on the subject of *education* for their offspring *fitted* to their intended calling, Farmers have not yet become half alive! Without the slightest pecuniary interest in the matter, we are willing to abide for our own opinion, the judgment of every man who reads it, as sanctioned by the Committee in the following Report. In the mean time, a copy of the work shall be sent with pleasure to any one sending a subscriber to the "Plough, the Loom and the Anvil," to 79 Walnut-street, Philadelphia, not as a remuneration in the cost of it, but in its intrinsic value:

REPORT ON F. G. SKINNER'S "ELEMENTS OF AGRICULTURE."

The undersigned committee, to whom was referred "*The Elements of Agriculture for the use of Primary Schools*," respectfully report: That they consider the appearance of such a work as in happy coincidence with the spirit that may be said to characterize this age of improvement. It seems to be admirably fitted, in form and substance, not only to impress on the youthful mind a knowledge of important elementary principles, but to awaken in it a thirst for future knowledge, and a perception that Agriculture is indeed a profession, demanding equally for its success and dignity, a wide range of intellectual inquiry and cultivation.

In the estimation of the committee, it has been well said, in the Report of the Central Committee on Agriculture, in France, that "the teacher may with confidence draw upon its pages for all that seems to be of primary necessity for himself first, and then for the children of adults confided to his care."

In short, your committee have no hesitation in recommending the *Elements of Agriculture*, translated and Americeanized by F. G. Skinner, to be introduced as a common school book, the price of which (but a few cents) bears no proportion to its intrinsic value and importance, while it places it within the reach of all. Your committee would regard its sanction by this Society, as contributing most auspiciously to one of the most important objects to which its attention can be given, to wit: *The cause of improved agricultural education.* They entirely concur with the memorial in this case, that as we would have the tree incline, so we should bend the twig; and that as an *entering*

wedge to a more appropriate system of agricultural education, for the sons of the cultivators of the soil, this is decidedly the best that has fallen under their notice.

All which is respectfully submitted. By order of

W. W. W. BOWIE, Chairman.

[The committee consisted of W. W. W. Bowie, of P. George's; R. M'Henry, of Harford; and A. Kimmel, of Frederick.]

In corroboration of the above Report, might be adduced the opinions of some of *the best* judges—men who have taken the deepest interest in the subject of education in New-York—Delaware—Maryland—Virginia and South-Carolina—men with whom we cordially unite in the belief, that without *more appropriate instruction at school*, the art of agriculture can never be pushed to that degree of improvement of which it is easily susceptible, when it shall come to be generally pursued by men educated *for it!* Some such real benefactors of the cause, have distributed the "Elements of Agriculture" at their own expense, and we understand it has been recommended and adopted by the school Commissioners in Delaware. If the reader should think we dwell on this subject of *agricultural education* too emphatically, we have only to direct his attention to our humble essays on the same subject, for the last thirty years, and he will find the opinion so inveterate, that it may now be pronounced "a disease we shall die on." But mark ye—Education can never become well systematized, general, appropriate and efficient, where people all follow the plough, and where, *therefore*, the tendency must be to *scatter*, instead of coming together and combining. "Where pursuits are various and population thick, men may train all their children to some useful and sustaining industrial occupation—but where all are at the plough, as in some of the States to which I have referred, parents must exhaust their means, in sending their children to distant schools to be boarded and educated, far away from the best of all teachers for health and morals—the sleepless watchfulness of the mother; or they must keep them at home deprived of the best of all earthly blessings,—a good education,—and alas! too often compelled to let them go at last to become their rivals in the far West, instead of remaining to be their safest and best friends and companions in their own neighborhood—for, in such states, practical agriculture, and that not in its highest forms, is the only pursuit with which the rising generations have any chance of becoming at all familiar!"*

The following extract from the Report of the Committee, chaired by that indomitable friend of the cause, Major Jones, of Delaware, on the important subject of "*agricultural productions*," is certainly not indicative of that diffused and general zeal, which is necessary to "advancement in agriculture," and which this patriotic society is so zealously endeavoring to inspire:

"The Committee on agricultural productions beg leave to report, that *no applications* have been made for the very liberal premiums offered by the society."

* We cordially unite with our colleague, of the "American Farmer," in the conviction that it may be deemed fortunate for the great ends that spirited association is endeavoring to achieve, that its worthy President was not allowed to resign his post.

"Mr. Calvert, announced his earnest desire of being excused from serving any longer as President—but the Society, by a unanimous voice, and by acclamation, refused to accede to his request. The burst of feeling which flowed towards the President, showed in how strong a manner he had attracted to himself the love and respect of the members. By his guiding care, all were ready to admit, the Association had been placed on the elevated position now held by it; and notwithstanding the reiterated appeals which Mr. C. had made to be relieved from further duty, it was determined that its interests required

* Skinner's address at Boston.

a still heavier sacrifice of his time and attention, before they could be dispensed with. He was literally forced to acquiesce in the decision, and will consequently continue to discharge the duties of the office for another year."

Another, and for a single one, doubtless the most instructive feature of the Exhibition, was the annual Address by the Hon. Willoughby Newton, thus characterized, very justly we are sure, by the same paper:

"His address was conceived in fine taste, breathed the lofty inspirations of a farmer's and a patriot's heart, and was delivered in the most happy manner. As we shall publish his address in our next number, we shall not forestall public opinion further than to say, it reflected honor alike upon the author, the cause of agriculture, and upon his native State, which may well be proud of such a son. Its teachings are instructive, and we hope will be well studied, in order that they may sink deep into the agricultural mind."

Prevented, unfortunately, from *hearing* it, we shall read it the more attentively, when it appears as promised.

There are, we know, very few practical Farmers, who can so well tell, as can the orator on this occasion, how soon, at what cost and how fruitfully the cheap poor lands of Virginia, can be made to yield remunerating crops; and doubtless he will have told too, why and how it is, that so much of the land of that State, naturally fertile, easily reclaimed, and lying along her navigable waters, *remains so long cheap and exhausted?* and if he has suggested an adequate and practicable remedy, within the general reach, and that will probably lead to general melioration, he will have brought about the great consummation so long sought for, and so devoutly to be wished. It can not, we should suppose, be for *want of knowledge*, for no people in our humble judgment, better understand the means of agricultural improvement than the "general run" of land holders of Maryland and Virginia. In its principles and its practice, none have been better instructed than they, by the Meades, the Pages, the Barbours, the Bartons, the Minors, the Garnetts, the Merriwethers and the Ruffins of the old Dominion; in Maryland, by the Bosleys, the Bowies, the Dorseys, the Goldsboroughs, Stevens, Lloyds, Martins, Emorys, Muses and a host of others, exemplary Farmers, so numerous that their "name is legion." In both States societies have been formed, again and again, for the last thirty or forty years, composed of practical Farmers of surpassing intelligence. At the very Lafayette Fair to which we have referred, was delivered an Address, by that true patriot, accomplished scholar and high bred gentleman—General Robert Goodloe Harper, which we have just read again with a degree of admiration not easily to be expressed—one which, if *addresses* would eradicate radical evils, and supply the want of wise legislation, might be stereotyped and profitably repeated for its profound and wholesome suggestions, at every Fair in the land.

Mr. Newton will no doubt have revealed to us, whether the ever widening area of cheap and exhausted land, is owing to want of knowledge—want of industry—want of capital,—or whether it is for want of that all-pervading and sufficient influence which can alone be supplied by a *reasonable certainty of steady adequate return to labor and capital.* He will doubtless have told us, in a word, whether it be possible to keep up, much less steadily augment, the productive power of any country which sends away to other countries its raw materials, to be manufactured and consumed; returning to the land, not even the refuse of its products. He will perhaps have disclosed how, if it be indeed possible (for we confess it is past our comprehension) for a country to improve in its agriculture, thicken its population, augment its wealth, build good roads and bridges, and school houses and churches; who ship away all the produce of their land; buying in distant States and countries, their ploughs, harrows,

coaches, leather, iron, hats, coats, and even their pegged boots and shoes; in the very act of which thousands of carmen and waggoners, ships and sailors, and exchangers are supported at the *expense of the producer or cultivator of the soil!* Should he have told us all this, he will have explained how it has happened, as attested by the venerable JOHN TALIAFERRO, on personal recollection, that the fine old orchards which in his early days abounded in Virginia, have "grown up in pines." In a word, he will have accounted for the phenomena presented in the following statistics. They are purposely confined to, and embrace, the whole range of tide-water counties, from Alexandria to Norfolk; comprising the congressional District erewhile represented with so much ability, by our friend from whom we confidently anticipate the solution of a state of things, in the contemplation of which, after more than thirty years of anxious labor in the cause of the Farmer and the Planter, it would now be superfluous, at least, not to say absurd, to declare that *we* find anything but pleasure. For ourselves, we believe it to be owing to our subserviency to the "policy of British merchants," so strongly deprecated by General Jackson—to that cunning policy, under the fascinating name of "*free* trade," which has led us within a year, to import, for Virginia and other States, foreign produce (wool, beef, mutton, flour, potatoes, &c.) to the value of 200,000 *tons of British iron!* and so believing, undertaking as we do, to teach the political economy by which agriculture *must* thrive or decline, as well as, and even more especially than the mere details of farming, (which most Farmers understand better than we who undertake to instruct them,) "situated," we say, as we are, and believing as we do, we should esteem it an act of *base treachery not to say so* at whatever sacrifice of the support we might otherwise obtain, from *some who don't like to hear disagreeable truths*, and have yet not the magnanimity to admit their error. But to the

POPULAR STATISTICS OF THE TIDE-WATER COUNTIES OF VIRGINIA, FROM ALEXANDRIA TO NORFOLK—*evincing almost unbroken uniformity of decline for forty years, embraced in that period.*

In	1790.	1820.	1840.
Fairfax,	14,722	11,404	9,370
Prince William,	11,615	9,419	8,144
Stafford,	9,588	9,517	8,454
K. George's,	7,366	6,116	5,927
Westmoreland,	7,722	6,901	8,019
Northumberland,	9,116	8,116	7,924
Lancaster,	5,638	5,517	4,628
Middlesex,	4,140	4,057	4,392
Matthews,	——	6,920	7,442
Gloucester,	13,498	6,678	10,715.

We cannot dismiss this subject, even for this occasion, without acknowledgment to the committee that brought to public notice the incident so well related in the following, from the committee on Neat Cattle. "In the midst of their duties" they say:

"They came across a little boy 5 years old, from Fairfax county, Va., named Horace Bayley, driving in yoke two beautiful heifer calves, 6 weeks old, which he had himself broken in 3 weeks; he drove them with such accuracy, and they were so perfectly docile and well broken, that forcibly it brought to your committee the recollection of the passage in the Holy Scripture, of the fiercest animal being led by a little child. Your committee without hesitation recommend unanimously to the consideration of the committee on discretionary premiums, to award to this child the *best* premium their duty will allow, and that it be given to *himself;* and would recommend to the notice of the Society this novel sight." JOSIAH W. WARE, Chairman.

Mr. Bailey, the father, is one of those "Yankees," of whom so much has been said, (with some measure of romance, as we apprehend,) who went from New England and settled on, and so soon improved the "poor lands of Fairfax county"—Mr. B., we apprehend, like most of his countrymen, was tempted by the cheapness thereof, and by that land-mongering disposition, which is said to be a Saxon instinct, to buy much more than he could improve. The small portion of 500 acres (we believe) which has been improved, has been dedicated to *milk dairy husbandry*—selling milk at a distance of 8 miles in the Washington market. He has, in a most exemplary manner, reared a very large family in habits of sobriety and industry, lives in a plain comfortable style, with all the industry and thriftiness of his own, and the proverbial hospitality of his adopted State. His sons are reared as well in the love of knowledge and the emulation of moral excellence as in habits of industry and personal independence and God send honor and success say we, *to all such aims and efforts.*

The whole subject is a fruitful one, going down to the lowest roots of agricultural inquiry, and therefore, in some shape, or under some head to be again and again discussed in this journal; until he who runs, shall be able to read, why and wherefore it is that our people are constantly dispersing and opening new lands instead of combining and improving the old and exhausted ones.

Prospects of the Farmers.—We invite the attention of our farming readers to the following statement of their prospects, which we take from the Liverpool *Shipping and Mercantile Gazette.* With *a short crop*, the prices cannot, we are told, exceed 45s. a quarter, or $10 80 for 8 bushels weighing 70 lbs. per bushel. What then are our prospects for supplying the "great grain market of the world?" Is it not better that we should determine to make our own the great market? It surely is so, and the day is not far distant when the farmer will see, aye, and *feel*, that the time has come for so doing:

"Harvest having been some time completed, and the time having scarcely yet arrived for preparing the land for autumn sowing, farmers have at present comparatively little out-door work to attend to, and they have consequently (as is usually the case at this period of the year) threshed rather freely. The more that the crop is tested by this proof, the greater do the complaints become respecting the deficiency of grain in proportion to the straw; and it is too certain, that the produce of wheat will fall materially short of what is considered a fair yield in average seasons. Present prices cannot, therefore, pay our growers; but there is so little to hope for in regard to the future, and the pecuniary position of the smaller class of farmers has, during the last two years altered so much for the worse, owing to undue foreign competition, as to render it more than probable that they will supply the markets freely until such time as they shall be obliged to direct their attention to ploughing and getting in their autumn crops.

"At most of the markets in the agricultural districts, wheat has been brought forward in sufficient quantities to check the tendency to advance, which prices exhibited earlier in the month, and in partial instances a reaction of about 1s. per qr. has taken place. The trade has also become slow at many of the large consuming towns, and at those places where, in addition to the home supply, good arrivals have been received from abroad, the turn has been decidedly in favor of the buyer. We are inclined to adhere to the opinion which we have on former occasions expressed, that at about present rates we shall continue to have large imports, and that, with free trade, the average price for the kingdom is not likely to range much over 45s. per qr. *even in years like the present, when the crop is below an average, and when such terms cannot remunerate the grower.* With the exception of Danzic, where some quantity of old wheat remains on hand, the stocks are small at the principal Baltic ports, and supplies of new having commenced to come forward, the exports from that quarter may, perhaps, not be large if Winter should set in early.

"From France, shipments of wheat and flour have been resumed, and will probably continue to be made regularly, so long as there is the slightest chance of profit on consignment in the English market."

FIELD, DEL.
CONNARDE & PINART, N.Y.

THE PROPER SHAPE AND QUALITIES FOR A BULL.

Supposing the excellence of imported breeds of cattle to be established, as it is reasonable to suppose it is, after so many years of attention to it, in a country where great means, much experience and sharp rivalry have existed so long, still it must be a very long time before these improved breeds will fall within the reach of farmers generally. In fact, these distinct breeds have each its peculiarity, adapted to particular circumstances, better than any common breed, for a particular object. If therefore, the breeder of cattle resides where circumstances warrant him, in going for that particular object, he will, of course, seek to possess himself of a stock most likely to secure it in the shortest time; but the fact is, that our farmers generally wish to combine several purposes, for *all* of which, no one of the improved breeds is eminently suited; and perhaps the best of our own breed *combine* as many advantages as any *one* of the foreign, if not more. At all events, there are certain points *essential to the excellence of all bulls*, and which may be found to characterize the best individuals of any breed—our country breed included—and which the breeder should always endeavor to realize. That form has been thus described:

"The head of the bull should be rather long, the muzzle fine; his eyes lively and prominent, his ears long and thin, his horns wide, his neck rising with a gentle curve from the shoulders, and small and fine where it joins the head; his shoulders moderately broad at the top, joining full to his chine; his bosom open, breast broad and projecting well before his legs; his arms or fore-thighs muscular and tapering to the knee; his legs straight, clean, and very fine bone; his chine and chest so full as to leave no hollowness behind the shoulders;* the ribs bowing, to keep his belly from sinking below the level of his breast; his back or loin, broad, straight, and flat; his ribs rising one above another in such a manner that the last rib shall be rather the highest, leaving only a small space to the hips or huckles, the whole forming a round or barrel-like carcass; his hips should be wide-placed, round, globular, and a little higher than the back; the quarters, from the hip to the rump, long, and instead of being square as recommended by some, they should taper gradually from the hips backwards, and the turls or pot bones not in the least protuberant; rump close to the tail; the tail broad, well-haired, and set on so high as to be in the same horizontal line with his back.

A bull is in possession of his generative powers and is competent to be used with two-year-old heifers, at fifteen months; but it is not advisable to permit him to co-habit with large cows, until he is arrived at greater age. It is proved by practice that the produce of a bull of fifteen months is equally stout and healthy as that produced from a bull of a greater age. To a young bull we would not advise more than ten or twelve heifers; but the numbers may be increased till he is four years old, at which age the bull may be considered in possession of his greatest powers. The cow and ox attain their full growth at seven years. Bulls when let loose with cows, are very much in the habit of not confining themselves to those allotted to their charge, but roam away and visit others; to prevent this, they are by some breeders tied up in a pen or stall, and fed during the summer on cut grass, clover, or any other green food, and in winter on hay. When required they are let out to the cows.† Others let them run with the cows

* Without saying any thing about it, as it was not our business, we have observed this to be a common defect in showy and much-vaunted bulls at some of our cattle shows.

† For greater convenience and perfect command, a ring should be put in the nose of every young bull. The annexed figures show the form of it.

Fig. 372.

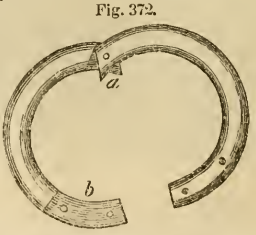

Fig. 373.

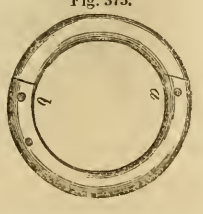

Fig. 372 represents the ring in an open state, ready to be inserted into the bull's nose, the joint *a* allowing the two sides of the ring to open as wide as that the end *b* may be inserted into the hole, to be burned or otherwise made with a sharp pointed instrument, in the form of a cocker's gaff, through the septum of the nose. Fig. 373 shows the ring closed, after it has been fastened into the nose, *a* being the joint, and *b* the two ends of the ring, lapped over and secured together by two countersunk screws. This ring, which would give a child command over a Leviathan, is formed of ¼ inch rod-iron, and its diameter over all is 2½ inches, and it should be highly finished.

throughout the year, and some work them with the oxen, but the latter is by no means recommended, as the bulls are generally vicious with oxen, and often do mischief by goring them. The working of a well-trained bull, however, may be found advantageous on a small farm, where his labor is of consideration."

The Bull of which we here give a portrait is the DUKE OF CAMBRIDGE, bred by the late Thomas Bates of Kirkleavington, England. He is now the property of M. Sherwood and A. Stevens, and won the first prize for bulls in aged class of short horns, at Syracuse in 1849.

To these gentlemen, as since to Mr. Morris, and previously to Mr. Vail, of Troy, the public is indebted for a fair supply of the blood of this celebrated "Bates" stock of Short Horns, and there can be none better.

Quite as good (some of them) were sent many years ago, to the editor of the "Plough, the Loom, and the Anvil," into Maryland, by the late Charles Champion, of Nottingham, England; and under an order by the same person, to the late venerable and deservedly beloved Gen. Van Rensellear.

On the appearance of Champion, Shepardess, and White Rose at the Maryland Cattle Show, so strong was the admiration they excited, and the surprise at the perfection of their symmetry, beyond anything we had previously seen, that Governor Lloyd (not previously a believer) promptly paid $1500 for the three, and afterwards said he considered himself well paid by the use of the bull for one season, in crossing his numerous herds on his several estates on the eastern shore of Maryland; and on the spot, the late George Calvert of Riversdale, father of the present President of the Maryland State Agricultural Society, a good judge, offered a resolution which was unanimously adopted, to present Mr. Skinner with pieces of plate for each animal, which was done, with emblematic devices; for the services he had rendered to the state by their introduction, he never himself having seen the pure blood, and having then no use for them but to present, to the view of Maryland farmers, the *reality* of what he had read much about and believed in. The funds for the importation were liberally supplied by the late Robert Oliver, and amounted to about the price paid to him as above by Col. Lloyd. Such is a brief history of that importation into Maryland.

A better bull than Champion, or a better heifer than White Rose we have never seen, unless it were *Marion*, selected from the herd of the late Earl Spencer, and imported by the late Thomas Oliver. His superior, according to our poor judgment, we have never met with. The first calf of White Rose was Wye Comet, sold, we believe, to Col. J. H. Powel, for $500. That such prices are not to be had now is owing to—what?

PERSONS desirous to have the best information extant on any particular branch of husbandry, adapted to the United States, will please intimate their wishes to the editor of the "Plough, the Loom and the Anvil." His resources enable him to supply the best and most recent discoveries and experience.

Few, probably, are aware of the amount which may be added to the wealth of a country by the use of a single Bull of improved breed, supposing his blood to add the value of a single dollar to the produce that spring from his loins within the term of his life-time, and without taking into account the offspring on the female side. It is said that 150 cows have been frequently served by one Bull within a season. But allow him 110 cows in the season, and deducting 9 per cent. for accidents, 100 calves would annually be produced from the use of him; and allowing his male calves to beget 20 calves each, in the term between the age of 15 and 27 months, and 100 calves every year thereafter, the extraordinary number of 9,870,000 will have been produced by the time the original Bull, the root of all, has reached the age of twelve years, which estimating at $1 more in value than the common cattle of the country, would make the enormous sum of $9.870,000 gain to the community! But putting it at one-half, or one-fourth, and who can compute the additional wealth that has accrued from the importation of short horns many years since into Kentucky by Sanders and Teagarden, and by Mr. Clay; by the Ohio Company, (with a history of which he had hoped to be supplied by Colonel Taylor, M C. from that state;) and from the importations of the Patterson Devons into Maryland; and the importations long previous to that by Patterson and O'Donnel; by the Trustees of the Massachusetts Agricultural Societies of Devons and Ayrshires, &c., and previous importations by Mr. Cushing, near Boston, without regard to cost, and whose blood was scattered gratuitously over the country. But the benefactors most likely to be popular and longest remembered are those who scatter most of *human blood!* Such is the way of the world.

HOW TO DEPRIVE THE FARMER OF A MARKET ON THE LAND FOR THE PRODUCTS OF THE LAND.—IRON FOR THE BALTIMORE AND OHIO RAILROAD.

It is proper the Stockholders should be apprized, that since the date of the last Annual Report, the negotiations which were then pending, for the supply of 22,000 tons of iron required for the entire road between Cumberland and Wheeling, terminated in a contract with Messrs. Thompson & Foreman of London. This large contract was accomplished mainly through the instrumentality of Messrs. Baring, Brothers & Company, and by the aid of their guarantee of the Company's Bonds, to the extent of the purchase, say $566,666 67. These Bonds with the endorsement of the Messrs. Baring have been sold in the foreign market at rates varying from 105 to 108 per cent.

The amount of iron already delivered under the contract, at the Company's wharves at Locust Point, exceeds 17,000 tons; and active efforts are being made to close the order with as little delay as practicable, so as to avoid the contingency of an advance in the existing rates of the tariff.

The Board take this occasion to acknowledge their obligation to Messrs. Baring, Brothers & Company, for their zeal and promptness in bringing about an arrangement so advantageous in all respects. The average cost of the rails when delivered will be about $40 per ton, including a commission of 2½ per cent. The iron has been manufactured with the greatest care: and it is believed will compare favorably with any that has heretofore reached this market.

We take the above from the last report of the Baltimore and Ohio Railroad Company, and offer it as a specimen of the almost hundreds of similar statements presented to us by the newspapers of the day, and we beg to call to it the special attention of our Maryland and Virginia readers. Cumberland and Richmond, and their vicinities, abound in iron ore, and in fuel, needing labor only to give them value. Labor requires food, of which the farmers of Maryland and Virginia have a large surplus, for which they need a market, and they require clothing, the materials of which abound, or might abound, on the farms and plantations of those states, and those of the west and south; and yet we are here seen to be importing, for this single road, *five hundred and fifty-six thousand dollars worth of food and clothing* in the form of iron! while the mines, and furnaces, and rolling mills of the Union, which were everywhere giving life to agriculture, are being closed, and the men who worked in them condemned to idleness, if they do not desire to seek the west, *there to become rivals, instead of customers, to the farmer.*

We entreat our southern friends to mark the fact that the men who make this iron for them, consume at this time scarcely even a mouthful of American food, and are so poor that they can purchase but little clothing, and are consequently very poor customers to either farmer or planter; while the men who, for years previous, wrought in our own mines, and furnaces, and mills, *ate no food but that which was raised within the Union,* and being able to clothe themselves as became freemen to be clothed, were consequently large customers to both farmer and planter.

We are told that this iron is cheap, but why is it that England now sells us cheap iron? It is, because of our own great capacity for producing iron and maintaining competition with her. In 1842, the total product of the Union scarcely exceed 200,000 tons. Five years after, under the benign influence of the tariff of 1842, it had reached the extraordinary extent of 800,000 tons, and would ere this time, have reached a million and a half, making a market for seventy millions of dollars of the products of the earth, for from the earth comes every thing that enters into the making of iron, the food, the clothing, the house room, and the kitchen utensils, both of which latter are merely the representatives of the food and clothing of the men employed in production. *Free* trade has already closed hundreds of the furnaces that produced that iron, and

it is about to close many more. It has ruined many of their owners, and it will ruin many more. It has driven tens of thousands of those who worked in them to employ themselves in the work of producing food for themselves, and it will drive many more. It has already closed a large market for the produce of the farms and the plantations of the Union, and in a little while much of that which yet remains will be closed and we shall then be dependent on England for a market in which *to sell* our food and *to buy* our iron; and then, unless we greatly err, instead of dear food and cheap iron, our farmers will have to mourn the result of their own insanity, which will be expressed in the few brief words, CHEAP FOOD, and HIGH PRICED IRON. Let them awake to the fact, that this is now in preparation for them, and that its occurrence is as certain as that light will accompany the rising of the sun.

LOSS OF CAPITAL FROM WANT OF CONCENTRATION.

WE copy the following statement of the enormous devastation from a single crevasse below New Orleans, chiefly with a view to call the attention of our planting readers to the fact, that labor and capital are *driven* into the cultivation of sugar by the want of a market for cotton, which market would long since have been made to the full extent of their ability to supply it, had they co-operated with the North in the effort to make a market on the land for all the products of the land. The world has never witnessed (except in case of war) so extraordinary a waste of labor and capital by an independent nation, as that which has gone on, and is now going on, within the limits of this Union, from our refusing to adopt a policy which would induce the now almost pauper laborers of Europe, to come here and engage themselves in the development of our own resources, thereby to become the best of customers to American Farmers and Planters.

"This crevasse occurred on the 7th of April, 1849. The levee through which it broke was only 4 feet high, but such was the inefficiency of the means used to close it, that in about 20 days it was abandoned as impracticable. At this time the breach was only 300 feet wide, and at first the waters were discharged into Lake Catahouatche, and thence over the large interior Lakes and Prairies. From the peninsular character of the country, however, between the high grounds fronting on the river and those on Bayou Lafourche, the waters accumulated upon the interior area to the depth of four feet, submerging the rear of all the plantations not protected by swamp levees, and destroying a large portion of their growing crops. Some well informed planters estimated the loss to be upwards of 10,000 hhds., but others have even advanced on these figures. 'Young plant cane' was killed by hundreds of acres, fences torn away, the plantation cattle driven off to a distance which prevented even inquiry as to where they were, and the comfort and prosperity of scores of plantations utterly destroyed or injured for an entire year. At a distance of forty miles below New Orleans, the water stood against the rear levees of plantations near three feet above the 'swamp level.' The lands continued submerged until about the 15th of September, though the water had fallen some three feet by the 25th of July, the widening and deeping of the mouth of the crevasse by abrasion seeming to keep up its capacity to discharge its accustomed volume.

"We visited in person the crevasse, about four days after it broke through, and at a time when it could have been stopped at an outlay of $3000. The indifference of the authorities of the Parish allowed it to cost the planters over *half a million dollars*, and then compelled the proprietor to build a new and expensive levee through his best sugar fields. The area submerged by this crevasse is estimated at 850 square miles, or 544,000 acres."

RANDALL'S unrivalled work on Sheep Husbandry, will be sent to any one sending $5 for two subscribers, or for two years' subscription to the "Plough, the Loom and the Anvil."

GAME—WHAT CONSTITUES GAME—LAND-ANIMALS AND BIRDS, WITH SOMETHING ABOUT THEIR NATURE AND HABITS.

In England, the word *game* includes the hare, the pheasant, partridge, (our pheasant,) quail, (our partridge,) heath fowl (black grouse) and moor-game, (red grouse,) snipes, wood-cocks and rabbits. These last three were only made *game* if killed by the gun, but not if taken by nets or springes. Deer are also considered game, and by some ancient statutes the heron, mallard, duck, teal, &c. were included, but are not so considered at present.

We shall not give what is said by approved authors about any except such as are common to our country, adding such as are peculiar to us, as the buffalo, racoon, canvass-back duck, &c.

If any ask, why treat of such matters in an agricultural journal, the answer is, that we trust our readers desire to have, for their sons, if not for themselves, a general knowledge of things so emphatically belonging to rural life.

We begin with the

GENERAL DESCRIPTION OF GAME, THEIR HABITS AND ECONOMY.

The hare is one of the most timid animals in nature; fearful of every danger and attentive to every alarm, it is continually upon the watch, and, being provided with very long ears, which are moveable at pleasure, and easily directed to any quarter, it is warned of the distant approach of its enemies. These, when pursued, are its constant and unerring instructors. The senso of hearing, so acutely alive to any noise from behind, enables her to avoid so frequently the throw of the greyhound, and, when hunted, to continue her course till quite clear from the clamor of the dogs: and when the ears are brought forward or sideways, her hearing is very imperfect. Deaf to the voice of her foes in front, she has been frequently known to run against objects, and hence the vulgar notion of the hare running herself blind. This, however, is in part attributed to the deficieney of her sight when directed straightforward. Whether the eyes of the animal receive any inconvenience from being so large and convex, or that they suffer damage by being exposed to dust and prickles from the lids not covering them completely, has not been determined, but it is certain that they do not see so perfeetly before as sideways or aslant. The hare, so destitute of the means of defence, has been provided by nature with the powers of evasion to a surprising degree; every part and member of this animal seems to be formed for celerity, and it is consequently one of the swiftest quadrupeds in the world. Its hind legs are much longer than its fore, and being furnished with strong muscles, give it a singular advantage in running up a hill; and of this it appears very sensible, as it is generally observed to fly towards rising ground when first started. The color of this animal is another great means of its preservation, as it often so much resembles the ground upon which it sits as not to be easily distinguished. In cold countries, near the pole, where the ground is covered with snow, the greater part of the year, the hare beeomes white, and is thereby rendered less conspicuous in these frigid regions. Thus formed for escape, it might be supposed the hare would enjoy a state of tolerable seeurity; but. though harmless and inoffensive, it has but very few riends. Dogs of all kinds, as if by instinct, pursue it; foxes, weasels, wild cats, and birds of prey, are its most dangerous enemies; and man, more powerful than all, makes use of every artifice to obtain a creature which constitutes one of the numerous delicacies of the table.

According to naturalists, the hare lives six or seven years, and attains its growth in one; though there is much reason to believe, that, if undisturbed, it would live much longer than this period. It engenders frequently before it is a year old. The buck seeks the doe principally from the month of January to the month of April. The female goes with young, thirty or thirty-one days, and brings forth generally two young ones (though they have been known to produce three or four), and deposits them in a tuft of grass, or in a little bush, without any apparent preparation.

The sportsman may know the male and female by the following distinctions:—the head of the male is short and round, the whiskers long, the shoulders more ruddy, and the ears shorter and broader than those of the female, whose head, on the contrary, is long and narrow, the ears long, and sharp at the tip, the fur on the back of a grey color,

inclining to black, and, in point of size, she is frequently found smaller than the male. There is, also, considerable difference in the feet. In the male the feet are small and pointed, and the nails short; whereas they are much longer and more extended in the female.

A young hare, that has attained the full growth, may be known from an old one by feeling the knee joints of the fore legs with the thumb nail. When the hare is old, the heads of the two bones which form the joint are so close that little or no space is to be perceived between them; on the contrary, when it is young, there is a perceptible separation.

Hares are said to foresee the changes of the weather, and to seat themselves accordingly. Hare-finders are partly directed in their search by the wind. Hares, however, seldom sit in the middle of a field, but at no great distance from the hedge which surrounds it. Shepherds on the downs assert that they have a variety of seats, which the weather induces them to change from time to time, and return to again; and the more rain that falls, the nearer to the top of the hills will the hares seat themselves.

We have several recorded instances of the susceptibility of the hare for education, such as dancing to measure, beating a drum, &c. They have also been frequently rendered so familiar as to feed from the hand, lie under the chair, or before the parlor-fire, and appear altogether as easy and comfortable as a lap-dog. Cowper brought up three young leverets, which he named Puss, Tiny, and Bess. These he kept a long time, and when tame and familiar they became a source of amusement to the poet.

The chase of the hare affords excellent diversion to the sportsman, showing at times a great deal of cunning and dexterity in avoiding the hounds; amongst the many shifts of the hare the following is remarkable:—A hare that is run during or immediately after the rain, will not take to the woods, on account of the wet which hangs on the boughs, but will often squat at the edge of a cover; and as soon as the hounds have overrun the scent, return to her seat; and unless the huntsman be at some distance behind to perceive the manœuvre, she, by this means, often escapes. Of all cases none affords so much pleasure to the pedestrian as the pursuit of the hare, as these animals run in circles, and generally return to their own ground, by which means foot-people are enabled for the most part to keep sight of the hounds; it is, in fact, charming diversion: the clanging horns, the halooing of the huntsmen, and the sweet-sounding notes of the pack, seem, as Somerville has beautifully describes, to

> 'Waft the floating joy
> Through all the regions near; afflictive birch
> No more the school-boy dreads: his prison broke,
> Scampering he flies, nor hears his master's call;
> The weary traveller forgets his road,
> And climbs the adjacent hill; the ploughman leaves
> The unfinished furrow; nor his bleating flocks
> Are now the shepherd's joy! Men, boys, and girls
> Desert the unpeopled village; and wild crowds
> Spread o'er the plain, by the sweet phrensy seized.'"

HORTICULTURAL MEMORANDA—FOR DECEMBER.

FOR THE "PLOUGH, THE LOOM AND THE ANVIL."

Winter with all its stern features approaches the Gardener and Horticulturist; whether prepared or unprepared, the results will tell. Premising that *all crops are protected*, and *all vacant ground turned over*, let us give a thought to the wants of the future. First of all, look well to the *Manure and Compost heaps*. Collect together every available material, and turn over the varied portions, that the whole may become a uniform mass: which defend from deluges of rain or floods of water. Look to your root heaps and root cellars, particularly Potatoes. If the *rot* appears, it will assuredly be stayed by turning over the tubes, selecting out the unsound. Take one bushel of air slacked lime, two bushels of charcoal dust, mix them together and sprinkle the mixture very evenly amongst the sound roots. This will stay the progress of the disease amongst 80 to 100 bushels of Potatoes; at least it has done it with us, and had we not resorted to it, we feel assured our winter supply had been lost.

The season also brings with it many enquiries and reflections, about the best method of laying out a *Lawn* of 50 feet or 50 acres. Should a tree be placed here, or a plant there? Should we have a pond or a rook-

ery? Should we have curved lines or straight ones? Should we adopt the clumping, interspersing, or solitary system? A thousand such questions arise, all put in vain to those who are not on the spot to advise; and to those who are too listless to think, or too uninformed to judge, we will point out a few of the incongruities that *are* seen, and that too where available sources were in profusion; but *cheap* labor and a want of thought *pied* the whole. It takes strong nerves to see a Cedar of Lebanon planted under the shade of a Weeping-willow; and the giant Norway Spruce nodding to Pinus pigmya; a Balm of Gilead under the drip of a spreading Oak; the magnificent excelsian Pine that would require nearly a fourth of an acre, *stuck* in a corner of three feet, where there was a beautiful lawn of nearly five acres; or behold a College that is endowed with millions, covering its grounds with *cheap* Maple by the hundred, *all of one sort*, and a few other kindred trees that fill the eye, and absorb the overgrown rubbish of some interested friend. Those corporations should pride in the sources of the arboretum of our country, as much as in the profundity of their Professors or the extent of their Libraries.

There is no country in the world that can produce the fertile scenery that we can. The foliage of our native forests combined with those of hardy foreign growth, disposed by the hand of any one who has sound reflection and a cultivated studious eye, can produce an outline and a picture that has never entered the imagination of our best landscape painters; behold the golden foliage of the Poplar with the garnet splendor of the Gum tree, in the months of September and October! The Weeping Willow backed by the towering Lombardy!—the flowing Dogwood in juxtaposition with the purple leaved Beech!—the Norway Spruce and the Panlownia, both branching from the ground upward! Such arborical associations combine the scenery of Lapland with that of the Tropics. We cry vengeance on the knife that lops the branches of the two last named trees.

To produce strong and striking effects in a scenery, there must not only be a tolerably extensive variety of trees, but there must be groups of particular kinds, in prominent places, with broader masses of varied form and color. *Observe—two* trees can never form *a group*. It requires three or more, to have a natural appearance. How often we have seen much labor spent in destroying the beautiful natural undulations of the lawn or pleasure ground, converting it into a tame level! How often is the valuable tree planted into the unnatural soil, without preparation or fixture, and left to struggle against ungenerous improvident liberality. The first object of consideration is what results are required? Next examine the soil—then view the objects in the distance and those in the immediate vicinity—these being carefully deliberated upon, the next important step is, the trees and plants. View their ultimate growth *not their present size*. Avoid crowding together; if you have him not, procure a good workman, careful and expert. Such is better worth two dollars a day, than an ordinary one is worth fifty cents. Another *vital* consideration is the formation of the head of the tree. In lawns, where the grass is to be regularly mown, we say make them branch as nearly from the ground as possible; where it is to be pastured, the heads must be as high as to prevent the branches being brouzed by the cattle—use the knife freely, and cut the branches close into the preceding year's growth —thin out where they are too thick—raise the earth high round the stem which will partially support the tree.

Where trees are to be brought from the woods, they should all be

prepared a season previous, by digging a trench round their roots from 2 to 5 feet from the main stem; fill it up again when the prong roots will freely fibre into the new soil, and the trees can be removed with perfect safety, six months after the operation. In removal of forest trees, they should be from situations as fully exposed as possible, and keep the tree to the same point of the compass after removal, as it stood before. If these few hints be fully carried out, pleasure and success will crown the effort.

BUIST.

THE PRICES OF COUNTRY PRODUCE.

OUR intention is, as soon as we can make the requisite arrangements, to give the New York prices current for the great leading staples of the country, such as cotton, corn, wheat, rye, oats, hemp, flax, tobacco, beef, pork, cheese, butter, wool, and iron, and will add to these as may be suggested, other articles if not of too much local interest as to forbid their introduction into a work like this.

We hope to arrange satisfactorily for this object in time for the January number. True, we might select these prices from the mercantile papers of that city, but they go into much more minute and extensive detail than would be necessary or proper for us. Our duty dictates the reservation of all the space we can command to the *two great objects of this work*, to wit:

1. Showing the farmer and planter by the transactions and incidents of daily occurrence around them, how much they are suffering by a policy that *separates consumers from producers*, and—

2. What is transpiring or practicable to increase (not to diminish) the actual *products of their labor and capital.*

We have said the *New York* prices because, as we cannot give the prices every where, and as this journal spreads with remarkable uniformity over the whole country, it is deemed best to give a view of the market which, more than any other, indicates the value of things in other places. In these monthly reports we shall endeavor to keep the reader advised too, of the state of foreign markets, especially in the "great workshop of the world," to which we shall go and ask them to buy, and what they will please to give for our greatly redundant supplies, until steady protection shall have enabled us to force the foreigner to come and *ask us* what we will *take* for the *residuum* of what we make.

The reader will observe, however, that there is a great difficulty in making up a general report as to the state of the crops and supplies, on account of the *vast extent of our country.* In England, not so large as some of our single states, the case is very different. At all events, we shall endeavor to make this department of the P., the L. and the A. fully recompensing to the reader for the space (one or two pages) that it must occupy.

For the present we can only give the following items, derived from much more extensive reports, in the last "New York Dry Goods Reporter."

COTTON. Nov. 22. At the commencement of this week there was a more active demand, principally for the home market. Manufacturers buying sparingly, and few laying in winter supplies. Stock on hand and on ship board 22,000 bales. Decrease in receipts so far, as compared with last year, 17,000. The sales to-day 4,000 bales at ⅛ to ¼ of a cent off, under the effect of news by the Niagara. On the 9th Nov. sales amounted to 2500 for the week. Fair Orleans was quoted at 8d.; Upland 7⅝. Stock on hand at Liverpool 447,500 bales, against 701,900 bales same time last year.

GRAIN. Wheat—Genesee white per bush.,	$1,15 to	$1,20
Canada in bond	1,04 "	1,08
Red wheat and mixed white	90 "	1,05
Southern wheat	90 "	1,00
Rye—Northern	82 "	84
Corn—Northern	70 "	71
Southern yellow	70 "	71
Oats—Northern	44 "	45

COAL.—Duty 30 per cent. *ad val.* Foreign is plenty, and in moderate request, and prices of this description lower; the sales post up 450 tons Scotch Steam on terms not public; 1000 Liverpool Orrel at $7,50 a $8; two cargoes of Picton, $5, 37½, four of Sydney, $5 a $5,25, 4 and 6 months, Anthracite has advanced to $7, in consequence of the high rate of freight betwern Philadelphia and here.

Liverpool Orrel	per chaldron	8 -- a 8 25
Scotch	"	— -- a --
Newcastle, Coarse	"	— — a —
Sydney and Picton	"	5 50 a —
Anthracite	per 2000 lbs.	6 — a 6 50

IRON.—Duty 30 per cent. *ad val.* Scotch Pig Iron is in fair demand, with sales of 1500 tons at $19.37½ a $20, cash, and $20,25, 6 mos.; 400 tons English Bars at $35 a 36; 200 tons Swedish Steel Iron $81 a $82,50, 6 months.

Pig, Scotch, per ton	19 25 a 20 50
Bar, English refined	50 — a — —
" " common	36 -- a — —
Sheets "	— 3½a — —
Swedish	81 — a 81 50
English Hoop	4 — a 5 —

DOMESTIC WOOL MARKET.

New York, Nov. 22. 1850.

The state of feeling previously noticed continues, with sales of 60 a 75,000 lbs. at previous quotations. From undoubted sources, we learn that there is now on hand and expected, large quantities of Foreign Clothing Wools. Manufacturers must try to use some portion of it in their production, else there will be no chance of the native material remaining within 10 per cent. of present price.

Our Dry Goods Report shows a more buoyant feeling in the Goods market, though no sales of consequence have been made, still the better feeling is a long stride forward.

Next week the clothiers will begin to come in for Spring material, when we hope to be able to report a permanent advance in the price of fabrics. Should these anticipations not be realized, and the Wool market remain as high as at present, there must be trouble among manufacturers. We quote:

American Saxony fleece,	43 a 45
Full blooded Merino,	39 a 41
¼ and ¾ Merino	35 a 39
Native and ¼ Merino	30 a 34
Super pulled Country	35 a 37
No. 1 pulled do.	32 a 33
Super pulled City	37½a —
No. 1 pulled Lambs	33 a —

We hope for decided improvement in this work; we give it our attention *heartily*, and all we ask is that an effort be now made by its patrons to put it on impregnable ground. *Now is the accepted time.*

☞ We had given out a capital article on the *diseases of dogs*, but want of space compelled its postponement along with other good things, although we have gratuitously enlarged this number by ten pages. If our friends were as anxious to encourage our journal by extending its circulation, as we to make it worthy of that much kindness, we should be perfectly content. While many take and pay for five copies, others take one with apparent reluctance, and sometimes—*forget to pay for that!*

☞ *De minimis non curat lex*, says the law maxim, but there are small things which magnify under Editorial optics—and such is the compositor's omission of the word *let* in the quotation from Proverbs—page 355. It should be

["Give her the fruit of her hands, and *let* her own works praise her in the gates."]

☞ A friend in Mobile, wishes to know where, and at what prices he can obtain 10 or 15 bucks of *best description* of merino, with 20 or 25 ewes—"such," he says, as "*Mr. Randall's admirable work describes.*" His letter, with comments, was given to the printer, but there was not room, although we have enlarged this copy by ten pages. Alabama has all the facilities and inducements for manufactories—coal—wool—iron—water-power—she only wants steady protection to American labor. More in our next.

READINGS FOR MOTHERS AND CHILDREN,

MORAL, ENTERTAINING, OR INDUSTRIAL.

QUITE sure are we, that some of our readers will be puzzled to know the reasons for an arrangement under which some of the items that will appear here, are placed in this Department—whether he, or we should say she, shall think them misplaced or not, will depend in a good measure on her locality. For we profess to have extensively enough, and carefully enough noted such things to have observed, that very different habits prevail, as to the housewife's cares and duties, in different parts of the country. In few things in fact, do these habits differ more than in the duties devolved, we might sometimes say, imposed, on the females of the household. We may mention in illustration of it, but not as a case of imposition where it occurred—that in conversing once with a highly respectable and very intelligent president of an agricultural society in New-York, on his field and his domestic management, to give us a better idea of the age and capabilities of his only daughter then absent, and of the advanced state of her household education, he remarked emphatically—"*she begins to bake*!" And yet in that very locality, the good woman of the house, would be exempt from some of the offices and cares devolved on the housewife in some other States.

The imposition of labors and duties, not properly within her sphere, which *sometimes* takes place, would not be quite so bad if accompanied with all the requisite helps and facilities. But if as often happens, the wife is to have the superintendence of the fruit department, the garden, the dairy, the meat-house, the poultry-yard, the soap-making, the candle-dipping, the knitting, the weaving, the cutting out, and the making up, besides the "cooking for all hands," and the whole care and education of the young children in the bargain; then in the name of justice and common decency let the husband see that she is supplied, to the full of his ability, with the requisite assistance in the way of appropriate labor, good utensils, abundant, and proper food for cows and poultry, and though last, by *no means the least*, with suitable books and competent teachers. Most emphatically should every mother insist on a choice supply of suitable books, fitted

"To wake the genius and to mend the heart."

for, be it ever borne in mind, that it is only, or very rarely, except in early youth, that is acquired that taste for reading, which above all things is to be coveted for our children.

Apropos to this opinion we have so often expressed, but not half so well, we may quote a passage from a little railroad-companion of a book, that is one which you may take from your pocket, or lay aside and take it up again, as you may happen to be in the mood, (or likely to be bored by some stupid *companion de voyage*) with assurance of something on every page, a pun or a sentiment to amuse or instruct you.

The little book to which we are alluding, is one of 200 pages, appropriately entitled "THE COMPANION," or AFTER-DINNER TABLE-TALK," just laid upon his counter by that discreet and judicious publisher of good things, GEORGE P. PUTNAM, 155 Broadway, New-York.

As to the value of a taste for literature, which, as we have said, is in 19 cases out of 20, only to be imbibed when young, Sir John Herbert writes, and we heartily unite with him:

"Were I to pray for a taste which should stand me instead under every variety of circumstances, and be a source of happiness and cheerfulness to me during life, and a shield against its ills, however things might go amiss, and the world frown upon me, would be a taste for reading. Give a man this taste and the means of gratifying it, and you can hardly fail of making him a happy man; unless, indeed, you put into his head a most perverse selection of books. You place him in contact with the best society in every period of history, with the wisest, the wittiest, the tenderest, the bravest, and the purest characters, who have adorned humanity. You make him a denizen of all nations, a cotemporary of all ages. The world has been created for him."

We have marked many passages and shall continue as we can snatch time for reading, to note things suitable for this department. In fact, if we would follow our inclination, we would *publish a weekly* under this very head; but we have always so much to say to the sterner sex, more than they will profit of, we fear, that there is not room to do justice to the claims of those who are ever uppermost in the esteem of every man of proper feeling. Turning to the same little volume, we take the following remarks, by the Rev. SIDNEY SMITH, on

THE INDESTRUCTIBILITY OF ENJOYMENT.

"Mankind are always happier for having been happy; so, that, if you make them happy now, you make them happy twenty years hence, by the memory of it. A childhood passed with a due mixture of rational indulgence, under fond and wise parents, diffuses over the whole life a feel-

ing of calm pleasure; and, in extreme old age, is the very last remembrance which time can erase from the mind of man. No enjoyment, however inconsiderable, is confined to the present moment. A man is the happier for life from having made once an agreeable tour, or lived for any length of time with pleasant people, or enjoyed any considerable interval of innocent pleasure; which contributes to render old men so inattentive to the scenes before them, and carries them back to a world that is past, and to scenes never to be renewed again!!"

Ah! how true, does not every one of us, boys "raised" in the country, feel all this to be! and, therefore, how incumbent on parents to afford to their children all the innocent pleasures they can do, consistently with their preparation for the great responsibilities of the present and the future.

For what consideration, would any of us relinquish the faculty of looking back on his youthful pastimes, and even its little cares and vexations? on the rapture he felt, for instance, on going after a slight fall of snow, and finding his trap all alive with innocent and deceived, and beautiful partridges! or going at the earliest dawn, and finding the poor nimble-footed hare, suspended off the ground, in his deadly snare, so cunningly "set," with the quarter of a hard red apple, the previous nightfall? or at seeing the lively and chattering squirrel, at the crack of the old family flint gun, come tumbling dead from the top branches of the hickory or the maple? or the note, sweeter than Jenny Lind's, that was wont to fall upon the ear, in the well known truth-telling voice of the old half hound dog, in striking the trail of that "same old coon?" or the joy inspired by the musie above all earthly harmony, of a pack in *full cry*, "*running to kill!!*" And again who would forego for base lucre, the remembrance of his delight on hearing that the coming holidays, by the "turning out" of the schoolmaster, and the secret influence of a paternal intercession, had prevailed with the pedagogue to extend the holidays some days longer than usual! aye, and, "tell the truth and shame the devil," the ill suppressed satisfaction that came over us, when told that Paddy the schoolmaster, not yet seasoned to the tide water country, had been seized with a shaking ague, and falling into the hands of the doctor, might not be abroad again for weeks! and then another enjoyment, the remembrance of which follows many a man to his grave; when the country schoolboy getting from his warm bed with siekening reluctance, looks out, and is rejoiced and animated at the sight of the *ground covered with snow!* sure that dear mother will beg "the children" off from going through *such weather* to school. If, however, the sun, as he hopes it will, *should* "break out" about 10 o'clock, when "too late to go to school," the snow need not keep him from slyly whistling up the dogs, (quick good fellows, to take the hint,) and stealing off to hunt the timid rabbit to some hollow tree, to be "smoked out" by his eager pursuers, with much more ambition and ardor than they ever pursued a problem in Dilworth, or conjugated a verb. Who, then, that has a memory for these things, (and is there any one who has not?) that does not agree with his Reverence, as to the "*indestructibility of enjoyment?*" or who can fail to agree with him, as to what he says, thus, about

FEMALE EDUCATION.

"The pursuit of knowledge is the most innocent and interesting occupation which can be given to the female sex; nor can there be a better method of checking a spirit of dissipation, than by diffusing a taste for literature. *The true way to attack vice, is by setting up something against it.* Give to woman, in early youth, something to acquire, of sufficient interest and importance to command the application of their mature faeulties, and to excite their perseverance in future life; teach them that happiness is to be derived from the acquisition of knowledge, as well as the gratification of vanity, and you will raise up a much more formidable barrier against dissipation, than a host of invectives and exhortations can supply."

And again, who can contest the validity of the following remarks on the Theatre, by the same Rev. gentleman, that is, if we could be sure that the play would be a "good" one, and the house always as it should be, under the best and strictest poliee?

"There is something in the word *Playhouse* which seems so closely connected, in the minds of some people, with Sin and Satan, that it stands in their vocabulary for every species of abomination. And yet why? Where is every feeling more roused in favor of virtue than at a good play? Where is goodness so feelingly, so enthusiastically learned? What so solemn as to see the excellent passions of the human heart called forth by a great actor, animated by a great poet? To hear Siddons repeat what Shakespeare wrote? To behold the child and his mother —the noble and the poor artisan—the monarch and his subjects—all ages and all ranks convulsed with one common passion—wrung with one common anguish, and, with loud sobs and cries, doing involuntary homage to the God that made their hearts! What wretched infatuation to interdict such amusements as these! What a blessing that mankind can be allured from sensual gratification, and find relaxation and pleasure in such pursuits!" *Sydney Smith.*

What a transition from what preeedes to what follows! It makes, however, for our fair readers, no more of a medley for this, her department, than society has made of her duties; and so we pass from the Theatre to what many like better, a good

CHICKEN POT-PIE.

Cut up and par-boil a pair of large fowls, seasoning them with pepper, salt, and nutmeg. You may add some small slices of cold ham; in which case add no salt, as the ham will make it salt enough Or you may put in some pieces of the lean of fresh pork. You may procure a suet paste; but for a chicken pot-pie it is best to make the paste of butter, which should be fresh and of the best quality. Allow to each quart of flour, a small half pound of butter. There should be enough for a great deal of paste. Line the sides of the pot two-thirds up, with paste. Put in the chickens, with the liquor in which they were par-boiled. You may add some sliced potatoes. Intersperse the pieces of chicken with layers of paste in square slices. Then cover the whole with a lid of paste, not fitting very closely. Make a slit in the top, and boil the pie about three-quarters of an hour or more.

This pie will be greatly improved by adding some clams to the chickens while par-boiling, omitting salt in the seasoning, as the clams will salt it quite enough.

Miss Leslie's Receipt Book.

RAISING MUSCOVY DUCKS.

The best treatise on duck-raising, is by one of the most accomplished naturalists of the day, Doctor Backman, of Charleston. There is nothing in it, we believe, inconsistent with the following:

"Therefore treatment like that bestowed on farm-yard ducklings will not do for little Muscovies. They must be kept very warm and dry and snug. Their nurse, whether duck or hen, must be cooped in a sheltered, sunshiny nook. There must be no water to tempt them to dabble; for, remember, that in Brazil their first bath would be of a temperature that would grow the Victoria regia. They must have as much care and frequent attention as little turkey chicks. For food, bread crumbs, chopped egg, and boiled rice in abundance. If the boy cannot dig up a few nice little red worms four or five times a day, let them have raw beef minced fine, as for the chicks of golden and silver pheasants. Forget that they are ducklings, and treat them as the young of tender gallinaceous birds. Proceeding thus, a farmer of our acquaintance annually rears them with success. He has lately killed some fatted musk drakes, over-year's birds, it is true, which, when dressed ready for the spit, weighed 8 lbs. each. We may now guess why so many more of them are reared in France, the south of Europe, and the United States of America, than in England. First rate birds for the table, like those just quoted, deserve a little trouble, though it is not the fashion of the present day to bestow much upon them. Willoughby tells us (p. 381) respecting "*The Guiny Duck:* Anais Libye, *Aldrov. and Bellon, which we take to be the same with the Muscovy and Cairo Duck*," that "A few years agone, a certain kind of *Ducks* began to be kept in *France*, of a middle size, between a *Goose* and *Duck*, having a broken voice, as if it had distempered or ulcerated lungs. Now there is so great a plenty of them in our country, that they are everywhere kept in cities and publicly exposed to sale: For at great entertainments and marriage feasts they are sought for and desired." And so they would be now, if some dinner-giver of eminence and reputed taste would patronise them for a single London season, and immortalise his own name by a Canard de Moscovie, a la ——; one ought not to award the title prematurely.

ON THE ART OF CURING GOOD HAMS, FOR A GENTLEMAN'S OWN TABLE.

WERE we called on to state any one thing in which the State of Maryland agricultural exhibition, most undoubtedly excelled any that has occurred in any other State, we should designate the display of *Maryland hams of bacon.* Oh! how we should like to have one such occasionally, to cut and come upon for a week!

We hereby offer to any one of the Exhibitors "'tis all I have to give," a year's numbers of the "Plough, the Loom and the Anvil," as many volumes as they will leave us hams, with our good old Calvert county friend, Edward Reynolds, on Light-street wharf. In the mean time, as the season for curing will soon be here, we submit the following recipes, presented by some of the competitors. We have no doubt it might well be said of them all, "*the worst is good enough.*"

REPORT ON BACON HAMS.

The committee on Bacon report, that they tasted and carefully compared twenty-one hams, and regarding flavor without reference to the age, shape or style of the hams, have awarded the 1st premium to the ham with the motto "Old Maryland,"—2d do. to that with the motto "Montebello,"—3d do. with the motto "Try me, I am better than I look,"—4th do. with the motto, "Nonsuch."

The committee describe the hams by their mottoes, because they have not yet been furnished with the names of the exhibitors.

J. A. PEARCE,
JOHN C. BROWNE,
C. P. HOLCOMB, Com'tee.

Mr. Hambleton's Recipe—1st premium.

BALTIMORE, Oct. 25, 1850.

To the President of the Agricultural Society of Md.:

SIR:—Understanding the letter accompanying the ham "Old Maryland," exhibited to-day, was lost, I respectfully enclose the following receipt of its curing: To every 100 lbs. pork, take 8 lbs. of G. A. salt, 2 oz. saltpetre, 2 lbs. brown sugar 1½ oz. potash and 4 gallons of water. Mix the above, and pour the brine over the meat, after it has laid in the tub some two days. Let the hams remain six weeks in brine, and then dried several days before smoking. I have generally had the meat rubbed with fine salt when it is packed down. The meat should be perfectly cool before packing. Very respectfully,

T. E. HAMBLETON.

Motto—"Old Maryland."

The meat was raised by Thomas Tennet, of Talbot Co. Md.

Mr. GLENN'S RECIPE.

To 1000 lbs. of pork, take half a bushel and half a peck of salt, 3 lbs. saltpetre, 3 lbs. sugar, and 2 quarts of molasses. Mix—rub the bacon with it well; keep on for three weeks in all, but at the end of nine days take out the hams, and put those which were at the top, at the bottom.

J. GLENN.

Motto—"Montibello."

Mr. Brooke's Recipe—3d premium.

One bushel fine salt, half bushel ground alum salt, one and half pounds saltpetre to the thousand lbs. pork, let to lie in pickle 4 weeks, hung up and smoked with hickory wood until the rind becomes a dark brown.

R. BROOKE, Jr.

Motto—"Try me, I am better than I look."

Mr. SLINGLUFF'S RECIPE.

The Ham of Bacon offered, has been cured by myself agreeably with the following recipe:—To 100 lbs. Green Hams, take 8 lbs. G. A. salt, 2 lbs. brown sugar or molasses equivalent, 2 oz. saltpetre, 2 oz. pearl ashes, 4 gallons water, dissolve well, skimming off the scum arising on the surface. Pack the hams compactly in a tight vessel or cask, rubbing the fleshy part with fine salt—in a day or two pour the above pickle over the meat, taking care to keep it covered with the pickle. In four to six weeks, according to the size and weight of the hams, (that is to say, the longer period for heavy hams,) hang up to smoke, hock up; smoking with green hickory wood.

I have put up hams for the past 12 or 15 years by the above recipe with uniform success, equal at all times to the sample now presented—Motto, "Nonsuch."

C. D. SLINGLUFF.

DIAMOND DUST.

FROM ELIZA COOK'S JOURNAL.

Laziness grows upon people. It begins in cobwebs, and ends in chains.

A rusty shield prayed to the sun, and said, "O, sun! illume me with thy ray." The sun replied, "O, shield! make thyself clean."

The most sober flower will often blossom from the bud that has danced the most lightly in the sunbeam.

Civility that has no soul in it, is but mockery.

It is want of judgment not to see danger; but stupidity or rashness not to fear it.

The young not only appear to be, but really are, most beautiful in the presence of those they love.

A foolish consistency is the hobgoblin of little minds.

The legitimate end of fiction is the conveyance of truth.

Of any art universally practised, the first teacher is always forgotten.

Many are great because their associates are small.

Modesty doubles the beauties which are seen, and gives credit and esteem to all that are concealed.

Imagination—an atonement for the miseries of reality.

Some men are good company for half an hour, others for half a day, and others for their whole lives.

It is not the quantity of the meat, but the cheerfulness of the guests, which makes the feast.

DROOP NOT UPON YOUR WAY.

BY JOHN BARNES.

Ho! ye who start a noble scheme,
For general good designed;
Ye workers in a cause that tends
To benefit your kind!
Mark out the path ye fain would tread,
The game ye mean to play;
And if it be an honest one,
Keep steadfast on your way!

Although ye may not gain at once,
The points ye most desire;
Be patient—time can wonders work,
Plod on, and do not tire:
Obstructions, too, may crowd your path,
In threatening, stern array,
Yet flinch not! fear not! they may prove
Mere shadows in your way.

Then while there's work for you to do,
Stand not despairing by,
Let "forward" be the move ye make,
Let "onward" be your cry;
And when success has crowned your plans,
'Twill all your pains repay,
To see the good your labor's done—
Then DROOP NOT on your way!

The Plough, the Loom and the Anvil.

VOL. III. JANUARY, 1851. No. VII.

THE PROSPECT:

AGRICULTURAL, MANUFACTURING, COMMERCIAL AND FINANCIAL,

AT THE OPENING OF THE YEAR 1851.

ADDRESSED TO THE HON. ROBERT J. WALKER,

CHAIRMAN OF THE COMMITTEE OF THE NEW-YORK FREE-TRADE LEAGUE.

BY HENRY C. CAREY.

THE EDITOR OF THE "PLOUGH, THE LOOM AND THE ANVIL" TO HIS READERS.

THE publication of the Harmony of Interests, being now completed in this Journal, it is our intention shortly to issue it in a separate form, and to render it more complete, the author has kindly and gratuitously, added several chapters with a view to show how perfectly all the phenomena of the present time correspond with those which became obvious as the compromise bill came into operation, and which were then supposed to indicate a high state of prosperity, and so fully to indicate it, that any attempt then made to prove the reverse would have been received almost with contempt. Since then, however, the nation has had a severe lesson, and it may be that some of the older and wiser heads of the nation may be disposed to recollect that the prostration of 1839, followed by the total ruin of a large portion of the banks, the bankruptcy of states and of corporations almost by hundreds, and of individuals almost by hundreds of thousands, were close at hand, in 1837, when all the world was hugging itself in its fancied security.

Mr. Carey's object, as we understand it, is to induce this League to adopt such a course, as will tend to render its existence productive of the object sought to be attained, to wit:—perfect freedom of trade, and with that view, to commence its operations, by an inquiry into the mode by which such freedom may most speedily and profitably be reached, whether by means of at once abolishing all duties, or at once raising them to such a point as will give efficient and complete protection, to our own farmers and planters, in their efforts to bring the loom and the anvil to their sides, and thus making a market in our own country, for the products of our country, abolishing at once the idea of incidental protection as a fraud upon the people.

Our readers do not need to be told that Mr. Carey looks upon efficient protection, as being the only road by which freedom of trade can be ultimately reached, nor that such is also our opinion. We, however, desire to see the question freely discussed. We regard it as one, on the right solution of which, every landholder in the country, is much more deeply interested than in the discussion of particular details in the practice of his art, and accordingly we now invite the free trade Editors to publish the views we are now about to give of the operations of the tariffs of 1842 and 1846, with the condition, that we will publish in return the proceedings and addresses of the League, or such reply as may be made to this statement; our special desire being, without the slightest reference to or care for mere *party* results, that all may "hear both sides." If the friends of the

present "free trade" system can offer any argument that ought to convert our readers, we shall be none the less pleased to circulate it, *our* object being, *the truth and nothing but the truth!*

Close at hand, on the North, we have evidence of the *advantages* that result from the maintenance of the *monopoly* system, denounced by Adam Smith, yet now passing through the world, under the honored and honorable name of free trade. Canada can send her wheat and her rye, her corn and her pork, her eggs and her butter, her milk and her cream, her hay and her straw to England, duty free; but unfortunately, the cost of getting there is more than their value when there arrived. She can get iron and cloth in exchange if they will buy any; but the potatoes and the turnips and the hay and the straw, and many other things that she desires to send, would be eaten up in the cost of transportation, and therefore purchase neither cloth nor iron. In this strait, she comes knocking at our door, and asks that she may sell her potatoes, her turnips and her hay within the United States, free of duty, and she take the proceeds, to *purchase cloth and iron in England!* and her *step*-mother seconds the application, offering, if we will only concede *this* small favor, that we may navigate the St. Lawrence, for the right of which we have already trebly paid, in the use of our canals and rail-roads, and that we may even have the fisheries, ours already by right. The modest request is refused, and Canada is in great distress. Foregoing that which the advocates of free trade would persuade us is so great a boon—the free market of England for our agricultural produce.—Canada, it is seen, has within the last month, at the single port of Oswego, entered under a duty of 20 per cent., one million of bushels of wheat, and 120,000 barrels of flour. Pass the reciprocity act, against which no farmers except those of Delaware, that we have seen, have had the discernment or spirit to protest, and the barrels would soon count by millions, and where then would be our farmers!*

Fortunately however, there are many in Canada, who now read the "Plough, the Loom and the Anvil," and we are assured the number will rapidly increase. "You think," says a Canadian correspondent, "you should have two hundred subscribers in Canada, and I say, if you do not, Canada must be destined to remain for a long time oppressed as she now is. Almost all our people are yet to be educated in the principles of political economy; almost all are praying for free trade with the United States. A friend of ours, Mr. —— of Montreal, writes for a copy of your journal—send it to him directly with a copy of *Carey's Harmony of Interests.* I think he will exert himself to obtain subscribers there. You will receive $3 for as many of the Harmony of Interests as you can send. We consider it the *best antidote extant to the Canadian free trade poison.* The British monopoly and colonial system is more ruinous to us even than to you. I thank you for your address delivered in Boston. It is here considered next to the Harmony of Interests."

Our advice to our Canadian friends is to study a certain well-known fable of Æsop, called "*Hercules and the Wagoner.*" They will there find that the advice given was—"help self first, and Hercules will help thee!" Let them cease importuning the Union for what never can be granted, but by folly or inadvertence, unless we are prepared to relapse again into colonial vassalage to England, even more absolute than now—that we are not inaptly called by the Edinburgh Review a "colony of England in a *matured state.*"

Let the people of Canada study the tariff of 1842, and see what changes would be required to make it meet their circumstances, and what arrangements could be adopted to secure its permanence, if enacted. That done, let them pass such a law, and they will cease to see emigration from the northern to the southern shores of the St. Lawrence; for they will then have commenced making a market on the land for the produce of the land; for the wheat, the rye, the potatoes, the turnips, the hay, the milk, the veal, and all others of the products of the land; and land itself will then acquire a value greater than similar land in the United States, if the unfortunate and never-enough-to-be-regretted tariff of 1846 is to be maintained. Let them do that thing, and the time *may* come when the United States will be found soliciting annexation to Canada—as affording a better market than will ultimately be found at home under the present free trade policy.

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* The conduct of John Bull in this matter reminds us forcibly of Doctor Franklin's *Frenchman*, who did wish "ver mosh for put his leetil red hot poker *tree, two, von* inch up his neighbor's fundament.

TO THE

HON. ROBERT J. WALKER.

SIR:—As author of the tariff of 1846, you are regarded as the leader of that portion of the community commonly known as the "free trade party"; and, as such, you have been appointed chairman of a Committee of the Association denominated "The Free-trade League"; and in that capacity it is that I now address you. The object of that association is declared to be that of endeavoring to bring about the entire abolition of tariffs, whether for revenue or protection, and the substitution of direct taxation for the support of government, with a view to the emancipation of trade from all restriction, and to the substitution of an economical government for that which has within the few past years become so enormously expensive; and nothing, as I conceive, could be more desirable than its accomplishment.

The League, thus formed, is composed, as I understand it, not of statesmen, but of teachers of statesmen. As such, their position is even more responsible than that of the statesman himself, yet the high responsibility of even the latter is so well exhibited in the following passage from a recent British free-trade journal *, that I should scarcely feel justified in omitting to invite to its perusal, not only yourself, but all the members of your association.

"It is of the last moment, that all who are, or are likely to be, called to administer the affairs of a free state, should be deeply imbued with the statesmanlike virtues of modesty and caution, and should act under a profound sense of their personal responsibility. It is an awful thing to undertake the government of a great country; and no man can be any way worthy of that high calling who does not, from his inmost soul, feel it to be so. When we reflect upon the fearful consequences, both to the lives, the material interests, and the moral well-being of thousands, which may ensue from a hasty word, an erroneous judgment, a temporary carelessness, or a lapse of diligence; when we remember that every action of a statesman is pregnant with results which may last for generations after he is gathered to his fathers; that his decisions may, and probably must, affect for good or ill the destinies of future times; that peace or war, crime or virtue, prosperity or adversity, the honor or dishonor of his country, the right or wrong, wise or unwise solution of some of the mightiest problems in the progress of humanity, depend upon the course he may pursue at those critical moments which to ordinary men occur but rarely, but which crowd the daily life of a statesman; the marvel is that men should be forthcoming bold enough to venture on such a task."

It *is* "an awful thing to undertake the government of a great country"; and "when we reflect upon the fearful consequences both to the lives, the material interests, and the moral well-being", not only of thousands but millions, and not only for the present but for all future time, that may result from error on the part of men charged with the duties of government, we may well be surprised that "men should be forthcoming bold enough to venture on such a task." Still more might we be surprised at the readiness with which the thousands of men who, as editors of, or contributors to, the daily, weekly, monthly, and quarterly press, undertake the yet higher task of enlightening the governors, as to the mode of proceeding most likely to promote the physical, moral, intellectual, and political well-being of those over whom they are placed. With a large portion of these, the sole requisite for the office with which they charge themselves, is so entire an unacquaintance with the facts by which they are surrounded, that errors of statement are perfectly excusable, because they know no better; while many of them have obviously in view nothing but the promotion of their own supposed and temporary interests, caring little, if even at all, for the community whose interests they profess to advocate, and solacing themselves, for the ruin of thousands of their

* Edinburgh Review, Oct., 1850.

fellow-citizens, by the fact that they themselves have been enriched. At one moment, they teach that the community is to be benefited by the expansion of banks and the making of roads, because they, or their friends, have land, or lots, or stocks, to sell. At the next, the banks are denounced as having produced speculation, and the denouncement is the more severe because their lots or stocks are sold, and the greater the decline the lower will be the price at which they can repurchase. They are *bulls* or *bears* on all the great questions of the country, as their own particular interests appear likely to be promoted by one or another course of action.

Of all the questions by which the country has recently been agitated, the only one now remaining to be settled is that of the road by which we may speedily and profitably reach perfect freedom of trade; whether it is to be by means of the immediate abolition of custom houses, by continuing the collection of revenue duties so arranged as to give inefficient protection to domestic manufactures, or by higher duties, meant to give efficient and complete protection.

In regard to the advantage that would result from freedom of trade, there can exist no difference of opinion. We are all free-trade men. We all feel the benefits resulting from the existence of that freedom in the intercourse between the various states of the Union, and we all know that great advantage must result from the establishment of similar freedom among the various nations of the world, whenever it shall become possible. How to render it possible is, however, a question in regard to which there will be found much difference of opinion; and it is, as I suppose, with a view to the discussion of the true mode of arriving at the point of entire and absolute freedom of trade that your "League" has been formed, and not for the purpose of teaching that there exists but a single mode, excluding the consideration of all others, as is the custom, without exception, as I think, of all the self-styled "free-trade" journals of the day. Their editors can see but one road leading in the direction of the goal at which they desire to arrive, and they denounce as "obsolete", the idea that any other road exists; yet, if we take the present House of Representatives as an index to the state of opinion, not less than *three-fifths of the voting population of the Union** are of opinion that there is another, a better, and a safer, road than that by which they would lead us; and if we take the various Congresses of the past thirty years, we shall find that there has never been a single one that has not furnished evidence that *a large majority of the voting population* was of that opinion. Such was the case, as you know, with the Congress of 1846. How absurd then is the effort to stifle discussion of this most important question!

It is one upon which men may, and do, honestly differ, and the true mode of arriving at a decision upon it is to have it fairly, fully, and honestly discussed. The truth *is* to be found, and those who feel assured they have it need not fear the most thorough and complete exposition and discussion of the real facts of the case. To misstate a fact, is evidence that the real fact will not answer the purpose. To avoid discussion, is evidence of consciousness that the case is a bad one and will not bear it. Now I cannot believe that the gentlemen of whom the "League" is composed would desire to avoid full and free discussion, for to do so would be to admit their own doubt of the truth of their position, at a moment when they were assuming the high "responsibility" of teaching the persons charged with the duties of government, and in relation to a question affecting in the highest degree the physical, moral, and political interests of the whole community, their friends and fellow citizens. It is the greatest of all questions for this Union, for it is the one that lies at the root of all the disquiet now existing at the two extremities of the

* Federal numbers give to every *three* voters South of Mason and Dixon's line, the power of *five* North of that line.

Union. It is, therefore, the one of all others that needs full, clear, and calm discussion, and such it is, I doubt not, that "the League" would desire to give it.

Thoroughly impressed with the advantage of perfect freedom of trade, I was for many years opposed to the protective system, and a believer in the doctrine which led to the passage of the Compromise-bill in 1833. The results of that system of policy led me to see that there existed some difficulty that I was unable to comprehend. The universal prosperity which followed the passage of the tariff of 1842, strengthened my doubts, and induced me to examine the subject more closely, and at length I was enabled to satisfy myself of the existence of an artificial cause tending to produce an unsound and impoverishing state of things, which it was the object of the protective system to correct, and that here, as in many other cases, the common sense of the multitude had outrun the speculations of philosophers. From that hour I became satisfied that the true and only road to freedom of trade lay through perfect protection, and had there remained a doubt upon the subject it would have been removed, when, after an interval of many years, upon a reperusal of *the Wealth of Nations*, I found that the essential object of that great work had been to teach the people of Great Britain, that the system, against which it has been the object of protection among ourselves to guard, was not less manifestly destructive of themselves than it was violative "of the most sacred rights of mankind" at large.

The tariff of 1846 has caused the total ruin of thousands and tens of thousands of the most useful men in the country. It tends to the utter destruction of the coal and the iron, the cotton and the woollen interests; and unless its progress be stayed, at that goal we must soon arrive, as must be admitted even by yourself. For all this we should elsewhere find some compensation. If we produce less coal and iron, we should have more food to sell. If we make less cotton cloth, we should export more cotton. If we make less woollen cloth, we should raise more wool. If we build fewer factories, we should export more tobacco. If we build fewer furnaces, we should export more naval stores. And all these things we must do, or largely diminish our consumption of cloth and iron; because if we do not make we must buy them, which can be done only by producing commodities which their producers are willing to receive in exchange for them. If these things have happened, there may be found therein some compensation for diminished production of cloth and iron; but if they have not happened, then is there no compensation for the vast destruction we have witnessed and are daily witnessing.

Have they happened? Have we more food to export? On the contrary, we have less from year to year. Have we more cotton, rice, tobacco, or naval stores to sell? The answer is found in the fact, that the quantity for export diminishes from year to year. The demand for ships diminishes, and the demand for labour diminishes, and instead of this country becoming from year to year more and more an asylum for the down-trodden people of Europe, it becomes from year to year less so; and with the diminution of immigration there is a diminution of the number of persons with whom we maintain perfect freedom of trade, untrammelled by the interference of custom house officers. Under the tariff of 1842, immigration trebled, and with each immigrant we established perfect freedom of trade. Under the tariff of 1846, immigration has become stationary, with a tendency to decline, and the number of arrivals in the last fiscal year is not greater than it was three years before. Perfect free-trade has ceased to extend itself. We trade now with a million of Europeans, still resident in Europe, who, but for the enactment of the tariff of 1846, would now be Americans.

Here is a mass of facts that should be accounted for, and they correspond exactly with those which were exhibited to view as the compromise tariff

became operative, as you will see by the perusal of the following pages, in which the movement under the various systems of the last twenty years is fully examined. They constitute my contribution towards the transactions of the "Free-Trade League"; and I desire now to invite your attention to them with a view to the discussion and settlement of the question, whether the road towards *perfect* freedom of trade lies through perfect protection, or through the total abandonment of the protective system. One or the other must be true. Incidental protection is a fraud, and the sooner it is abandoned the better it will be for the nation. If protection is right, it should be adopted, as being the way by which we may speedily, safely, and profitably reach perfect freedom of trade. If it is not right, it should be at once and entirely abandoned.

The facts here given are, as I believe, accurate. If any of them are otherwise, it is because of the exceeding difficulty of obtaining information in relation to some of the subjects brought under consideration.—If any errors exist, I shall be glad to have them indicated, together with any error of deduction that you may discover. I invite you to a full exposition of them. My desire is to find the truth, and that alone; and if you can account for the facts in such manner as to prove me in error, it shall be as frankly admitted as will be the case, I am persuaded, with yourself, when you shall have satisfied yourself that the result of the four years' experience of the policy of 1846 has been to diminish everywhere throughout the country the value of labour and capital, and to deteriorate the condition of the people. I have freely examined your views, as published by yourself. Be as free with mine.

It is time that the people of this country should learn to think for themselves on this important subject, instead of borrowing all their ideas from the works of English politico-economical writers, who, while claiming to belong to the school of the author of *The Wealth of Nations*, repudiate all his doctrines, praising what he denounced, and everywhere denouncing what he advised—to wit, the careful cultivation of the home market, by means of which the products of the land should be consumed upon the land, to the advantage of the labourer and the land owner, the manufacturer and his operatives, the ship carpenter and the merchant. From the day of the publication of his great work to the present hour, English political economy has steadily receded, until it has at length brought the nation into a state of exhaustion, from which extrication would seem almost impossible; and yet, free as we claim to be, we adopt all its errors, and unite with its teachers in repudiating the doctrines of the only sound political economist the country has ever produced—Adam Smith. From his day to the present hour, it has never, to my knowledge, made a single contribution to the science that will stand, although theory has followed theory, and Ricardo and Malthus have been almost deified as the great benefactors of mankind in discovering and announcing the existence of great natural laws, in virtue of which famine and pestilence are to attend obedience to that first of all the commands of God, "Increase and multiply"; and increasing poverty among the masses, with increasing inequality of condition, is to be the reward of that growth of population and wealth which always follows obedience to the great law of Christ, "Do unto your neighbours as ye would that they should do unto you." The object of the British system, *denounced* by Adam Smith, as calculated to diminish the return for labour and capital both at home and abroad, and *advocated* by all his successors, as calculated to increase the return for both, is that of making England "the workshop of the world." To attain that object, it was necessary to *underwork the world*, and every where supplant the native manufacturer in his own market. It has been done in Ireland, and the

results are famines and pestilences, of such constant occurrence that the country lies almost a corpse upon her hands. It has been done in India, until the whole class of small landholders has utterly disappeared, and the productive power of the country is so diminished that the government must become bankrupt from the hour that China shall acquire power to prevent her people from being demoralized and poisoned with the opium, to secure the power to *smuggle* which England battered down her cities and destroyed her citizens. It has been done in the West Indies, until they have all been ruined. It has been done in her North American provinces, until their first desire has become that of abandoning "free-trade" with England, by which they are ruined, and obtaining admission into our Union. It has been done in Portugal, until her ancient ally is reduced to the lowest abyss of poverty. It has been done in Spain, by aid of the smugglers of Gibraltar and of Portugal, and there, as every where, the result has been the same—poverty and destitution on the part of the people, and weakness on the part of the government.

Having exhausted her customers, the poison now reacts upon herself. Her system has built up the fortunes of the few, who have become the sole possessors of land, while the whole body of small owners and occupants that existed in the days of Adam Smith, has disappeared. The day labourer has taken the place of the little farmer, and from day to day the tendency to the accumulation of the land in the hands of large owners increases as the productiveness of labour decreases. The nation has fully and fairly realized what was said by Adam Smith, when he spoke of "a nation of shopkeepers." It is a nation of middle-men, living at the cost of the producer on the one hand and the consumer on the other, and having for its whole code of morals the obligation of "buying in the cheapest and selling in the dearest market." To produce cheaply, the large manufacturer must have labour cheap, and the more land is centralized in the hands of the few, the greater must be the "competition" for employment, and the lower must be the wages of the unhappy labourer or workman, delivered over to the tender mercies of "the sweater",* another *middle-man*, who stands between the tradesman and his workmen. The consequences are precisely those anticipated by Dr. Smith. The class of high-minded English merchants, renowned in earlier times, has disappeared, to give place to a body of gamblers, whose dishonesty and rottenness are brought full into view on the occasion of each successive revulsion—the little agriculturist of older times has become the occupant of the lanes and cellars of Glasgow, Liverpool, and Manchester—the artisan has become the slave of the middle-man,†—his wife ekes out the wages of her husband and herself by the gains of infanticide‡—or her children, if allowed to live, contribute, by aid of incestuous intercourse, to the maintenance of population—while the nation, becoming daily weaker, sinks from the station of the proud England of olden time to become the mere creature of the lords of the loom.

Such are the results of an insane effort to compel the world to permit her everywhere to interpose herself between the producers and the consumers of the fruits of the earth—such the results of a long series of laws having for their object the establishment of *a monopoly of the machinery for the production of cloth and iron*—and such as they are, they are precisely those predicted by Adam Smith three-quarters of a century since.

* For a full understanding of this term and of the horrible system which it indicates, I must refer you to the Autobiography of "Acton Locke," one of the most powerful and interesting works of the day.

† See "The Sweater's Den," in Acton Locke.

‡ For an account of the *organized* system of infanticide established in, and now rapidly spreading through England, see Kay's very interesting work on the social condition of England and the Continent. To rescue the poor children it is now proposed to have *public nurseries!* The barbarism of Sparta is thus to be reproduced.

It is to aid in the maintenance of a system like this that we are invited in the holy names of friendship, and peace, and freedom of trade. In their names we are invited to close all our mills and furnaces, that we may have more food and cotton to send abroad to enable the cotton and iron lords of Britain to swell their immense fortunes, to monopolize more land, pull down more cottages, drive more labourers to the lanes and alleys of London and Liverpool, Manchester and Glasgow, increase the "competition" for employment, and thus enable the cotton-lord to buy labour in a still cheaper market and sell in a dearer one. In their names we are invited to send more cotton and more food, to pay more taxes for the support of armies to be employed in enslaving the people of India, of Ireland, of Scotland, and of England herself. In their names we are invited to contribute toward the maintenance of a system that has done, and is doing, more for weakening, demoralizing, and enslaving the people of the world, than any that has ever been devised, and that must be annihilated before liberty can raise its head.

To the maintenance of that system we are now the largest contributors. Without that aid it perishes. I ask you then to reflect whether, as men, as Christians, as Americans, as statesmen, or as teachers of statesmen, we are not bound at least *to inquire*, before we adopt any measures tending to render us the accomplices of the great monied aristocracy of Great Britain in the perpetration of such a series of crimes?

Happily, the effort for the annihilation of this cold-blooded and detestable system need involve no sacrifice. An examination of the tables here given must, as I think, convince you that, under a system of efficient protection—that system which looks to a war upon monopoly for the sake of perfect freedom of trade, the return to labour and capital both increase. It must, I think, satisfy you that when we build the most furnaces, we produce the most food —that when we build the most mills, we produce the most cotton—that when we make the most cloth and iron, we build the most ships—that when we most diminish our *necessity* for depending on distant markets, we enjoy the most *power* to go to those markets—that when we look most to home, we enjoy most influence abroad.

It is to the inquiry whether this is, or is not the case, that I invite you. Your influence is great. Your political friends are accustomed to look to you for instruction on this great question, and the whole responsibility of the success or failure of the present system—perhaps, indeed, of our whole system—must rest on you. You have heretofore acted, as I am persuaded, under "a profound sense of the responsibility" incident to the direction of affairs involving "for good or ill the destinies" of millions of your fellow-citizens, and you will not now forget that "every action of a statesman is pregnant with results which may last for generations"—and therefore, will pause and reflect before you undertake the further advocacy of a system that tends to lay the nation prostrate at the feet of Britain. I ask you only *to inquire* if the time has not arrived when we should emancipate ourselves from the controul of such a soul-destroying system as that of Britain has proved itself to be—if it is not time that we should go back to the doctrines of Adam Smith, repudiating entirely those of the men who have repudiated him. That emancipation must follow the establishment of your association, provided only that its members determine to study and discuss this great question preparatory to undertaking to determine for themselves, or to advise others, as to which is the true and certain, the speedy and the profitable, road to that perfect freedom of trade which we all so much desire to see established.

I am, yours very respectfully,

HENRY C. CAREY.

BURLINGTON, *Dec.* 24, 1850.

THE PROSPECT:

AGRICULTURAL, MANUFACTURING, COMMERCIAL, AND FINANCIAL:

AT THE OPENING OF THE YEAR 1851.

BY HENRY C. CAREY.

CHAPTER I.

At a great bargain, pause awhile! The advice is old; yet, of those who have practised in accordance with it, there are few who have not had reason to be satisfied that, although old, it was sound.

We are now buying "great bargains." We are obtaining iron, cloth, and silks, on the cheap condition of giving obligations for the future payment of those by whom they are supplied. The nation is therefore, as the newspapers inform us, uncommonly "prosperous;" that is, it is eating, and drinking, and wearing, and using, commodities that have, as yet, cost no labor to provide.

Fourteen years since,—to wit, about the close of the year 1836,—the nation was, as the same authorities then assured us, equally "prosperous." Great Britain was willing to furnish us with cloth and iron to any extent, on the simple condition that she should receive evidences of debt, bearing interest. The terms were easy, and we took all she chose to send; and the more she sent, the greater was the "Market for American Securities," and the more "prosperous" we became—on the same principle that the man "who spends half a crown out of sixpence a day," is making "a large market for his securities," and is highly "prosperous," until the day for payment arrives, bringing with it the dunning creditor, to be followed by the constable, or sheriff. On that occasion, our "prosperity" lasted, increasing with every hour, until about the tenth of March, 1837, when commenced the downward movement. First fell some extensive brokers. Next in order should have been the mercantile community; but the banks kindly relieved their debtors from all present necessity therefor, by stopping payment themselves, and thus were enabled to supply paper, to be used in payment of debts contracted to be paid with gold. By aid of this expedient, the wheels of the machine were kept for a time in motion; but in due season came the turn of the merchants, followed by the States, and they, in turn, by the Union; and thus ended the chapter of "prosperity" that commenced in 1836. We had bought "great bargains," but found them hard to pay for.

Four years since, England was, in like manner, uncommonly "prosperous." Nothing could exceed it. Ten pound shares became, in the twinkling of an eye, twenty pound shares, and wealth increased so rapidly, that it was held to

be difficult to imagine in what manner it could ever be profitably invested. Since the days of the *Rue Quincampoix**, nothing had been seen to equal it. The nation was becoming rich by buying "bargains." It was converting the cheap and perishable food of Northern Europe into enduring rail-roads, in the construction of which were employed a large portion of those who had been till then the food-producers of England. It was thus giving "old lamps for new ones," and with the usual result. The old one was of gold, and the new one proved to be only of copper gilt—resembling, in that respect, the mass of cottons, and woollens, and the iron, the cutlery, and other goods, with which Britain herself is accustomed to supply the world so *cheaply*.

Again has "prosperity" come round among ourselves. We are closing the mines and furnaces of the country, and building steamers, to enable us to obtain, with greater facility, the *cheap* cloth and *cheap* iron of England. We are giving "old lamps for new ones"; and the "bargain" is too "great" to admit that we should "pause," even for an instant, to reflect before it is accepted. Shall we profit by it? Is the "prosperity" that we are daily assured exists to such a vast extent amongst us, real, or is it

> "like Dead-sea fruits,
> That tempt the eye, but turn to ashes on the lips."

as was that of 1836? The question is of great importance, and deserves a careful examination; and, believing that there are some amongst us who will be disposed to give to such an one the time requisite for its perusal, it is now undertaken.

In so doing, it is deemed desirable to call the attention of the reader to the fact that here in 1836, and in Great Britian in 1846, the subject which chiefly occupied the attention of the community, was the construction of new modes of transporting men and things. Among ourselves, the great strife was to determine which state could make the most road or the most canal, and individuals and states entered upon the work with an ardour bordering almost upon insanity. So is it now. Scarcely a day passes that does not bring with it notice of the formation of a new company, the contraction of a new loan, the issuing of new bonds, or the result of some new survey for a road; and the world is next to be astounded by the prompt construction of a rail-road across the Isthmus, another by the Gulf of Tehuantepec, a ship canal to connect the oceans, and last, but not least, a railroad direct from the valley of the Mississippi to California. We are all familiar with the railroad *mania* of England in 1846, which preceded the present state of almost entire exhaustion, from which she seems unlikely soon to recover; but not the less do we seem disposed to try to go beyond her; and the more completely we can distance her, the greater, it is supposed, is likely to be our "prosperity."

Another point of resemblance between 1836 and the present time is most remarkable. The former was characterized by an enormous emigration from the older states to the new lands of the West; and the larger the amount of *emigration*, the greater was held to be the "prosperity" of the nation. So is it in 1850. Almost every newspaper furnishes us with notices of the emigration from New England, New York, Pennsylvania, and even from Ohio, to the newer states and territories of the West; while they, in turn, furnish almost countless emigrants to California.

To this the reader might, perhaps, be disposed to reply, that the *immigration* into the Eastern States from Europe was so great as to produce great *emigration* from those states to the West, and that, as the former increased, the latter must necessarily do so likewise. An examination of the real state

* The *Rue Quincampoix* was the scene of all the negociations connected with the great Mississippi scheme which spread such ruin throughout France in 1718.

of the case would, however, bring to light the unpleasant fact, that, step by step, as *emigration* increased, *immigration* diminished—thus proving another remarkable resemblance between the former and the present periods of "prosperity," as may here be seen—

1833–4....	Immigration 65,000	1848–9.....	Immigration 299,610
1834–5.....	53,000	1849–50.....	Estimated 225,000
1835–6.....	62,000		

The *emigration* of 1836–7 was double that of 1833–4, and that of 1849–50 has been double that of 1848–9. How far this emigration and this road-making tend towards the production of "prosperity," we may now examine.

Men are prosperous in proportion to their ability to obtain food, clothing, and shelter in return for labour. The intelligent farmer devotes much of his time and labor to the work of cultivation, producing articles needed by himself and his neighbors for *present* use. His leisure he devotes to the improvement of his farm, to fit it for larger production of such articles for *future* use; and thus it is that he accumulates capital, by the aid of which he is enabled, from year to year, to produce and to consume more largely, while accumulating from year to year more rapidly. The present productiveness of his labor forbids the necessity for going in debt to the neighbouring shopkeeper, and he is therefore enabled at all times either to hold or to sell the produce of his farm, as his interest may appear to dictate.

His less intelligent, but more ambitious neighbour, pursues a contrary course. With him, the enlargement of his farm and its preparation for *future* use, is the leading idea. His leisure alone is given to the work of cultivation for *present* use. From year to year he clears more land, fences more fields, and cuts more roads; and from year to year he finds himself more in debt at the store. Year after year he creates a new mortgage upon his land and his labor, until, at length, the sheriff sells him out; and he then, to his grief, discovers that he has spent too much time and labour upon the making of a *machine* for future production, and is ruined; whereas, had he given the same time to the present production of commodities, or *things* needed by himself and his neighbours, he would be rich.

If we now look around, we shall see that much of the ruin that takes place among manufacturers, coal miners, furnace men, and indeed in almost every pursuit in life, results from devoting too much time and labour to the creating of *machines*, and too little to the production of *things*. The manufacturer withdraws the capital that should keep his spindles and looms in motion, to apply it to the work of employing other men in the creation of further spindles and looms, and he is ruined. He has expended too much labour in *machine-making*. The coal operator has a productive vein of coal. He desires another; and, to enable him to start the second work, he is compelled to deprive the first of the use of the capital needed to maintain its productiveness, the consequence of which is, that he is ruined. The furnace man stops the working of his mines to build another furnace, and he too is ruined. He has given too much labor to the making of *machines*, and too little to the production of *things*. Look round where we may, it is the same. Manufacturers overbuild themselves. Farmers and planters are anxious to have too much land. They are all too much given to *machine-making*, and they all suffer from the diversion of too much labour from present production.

What is true of individuals, is equally so of communities and nations. The thousands of farmers who abandon their farms in Maine, New York, Pennsylvania, or Ohio, and the thousands of planters who leave their plantations in Virginia, the Carolinas, and Georgia, to go to make new farms in Iowa or Wisconsin, or new plantations in Texas or Arkansas, abandon the work of

producing *things for present use,* to apply themselves to the making of *machines for future use.* The man who cultivates the old farm is a producer of all he eats, and of something to give in exchange for the sugar, the tea, the coffee, and the clothing that he needs; but the moment that he quits that farm to engage in the work of producing a new one, he becomes a consumer only, and he is fortunate if, at the close of the second year, he has succeeded in producing enough to feed and clothe himself. For the first year, and often for the second, the general amount of production is diminished by the whole quantity that he would himself have produced, with the addition of what would have been produced by the people whom he is obliged to call to aid him in the work of removal, and in that of preparing his new machine. Commodities become more scarce as new farms and new plantations become more numerous, and the consequence is, that the former rise in price as the latter fall. The man who works in a furnace is producing iron, a commodity in exchange for which he can obtain food. Close the furnace and set him to road-making, he continues to consume food, but he is producing only a machine to be used by others, and as machines become more abundant, iron becomes more scarce. The coal miner produces coal and the weaver produces cloth. Close the mines and the mill and set them to clearing land, and they will cease to produce any thing that can be worn or used—their labor being expended upon the creation of a machine for future production. Farms will, in time, become more plenty; but, in the mean time, food and clothing will become more scarce, and more difficult to be obtained, and the "prosperity" of the community will be diminished. The capitalist will obtain less interest, and the labourer less food and clothing.

To those who will take the trouble to reflect upon this subject, it will now be obvious that, when this work of *machine-making,* in "the extension of the area of freedom," by the creation of new farms, is carried to excess, it must be attended with a diminution in the general power of production, and consequently in the power of consumption—the true test of "prosperity."

That, however, is not all. The greater the extension of the area of cultivation, the greater is the necessity for roads, and the greater will be the diversion of labor from the work of producing *things* to that of making machines upon which *things are to be carried.* A road produces nothing. That roads are desirable, is not to be doubted. So are fences: but if the farmer spends his whole time in making fences, and if he allows fence-making to do more than occupy his leisure time, he will be ruined. So is it with nations. When they permit road-making to become the great pursuit, they are on the road to ruin. Roads, like new farms, are mere machines. Those who make them must be fed, and clothed, and lodged. The roads themselves cannot be eaten, drunken, nor worn, and the "prosperity" of a nation, like that of an individual, is dependent upon the relation that exists between the amount of commodities that *can* be eaten, drunken, or worn, and the number of persons that require to be fed and clothed. The more rapid the *increase* in the *unnatural* extension of roads, the more rapid *must be* the *decrease* in the quantity of things to be carried upon them, and the greater the depreciation in the value of such property. Neither the farms, the plantations, nor the roads, can be exported in payment for the cloth and iron consumed by those who make them.

To arrive at a clear understanding of any politico-economical question, it is essential that the student should satisfy himself that nothing that is true in regard to an individual, and that individual himself, can be untrue of an assemblage of individuals, whether that small assemblage constituting a town, that large one constituting a city, or the still larger one styled a nation; and the real cause of most of the difficulties that exist in relation to such questions

is, that men, and enlightened men too, are perpetually teaching that that which they feel and know to be untrue as regards themselves individually, is true as regards themselves and their fellow-citizens collectively. Every man who reads this knows that if he apply the chief part of his income to the enlargement of his house, his mill, his farm, or his furnace, while starving his business, and going in debt from year to year, thus piling interest on interest, he must be ruined; and yet, with a large portion of them, it is matter of rejoicing, to see the nation devoting a large portion of its time to the increase of its machinery of transportation and exchange, at the cost of the present production of things to be exchanged; and the more rapid the increase of this tendency to *machine-making*, the more rapid, it is supposed, must be the growth of "prosperity." To all who entertain such views, I would suggest, that they would endeavor to judge the movement of a nation as they would judge of their own or of that of a neighbour, and when they shall do so, they will be prepared to arrive at the conclusion to which they must, I think, be led by an examination of the movement of this country during the past twenty years, to wit, that the individual, or the community, that *neglects the present production of things* to to be used or exchanged, to apply itself to the production of *machinery* for future production or exchange, is in the direct road towards bankruptcy, and that, with every day's persistence in that direction, the course must become more rapid, and the tendency to arrive at that goal must increase.

At the present moment, England is driving her people from the production of food to the creation of machines to be used in bringing food from distant countries; and with every new machine the "prosperity" of the nation is supposed to increase. She pulls down the houses of her people, and raises money for the purpose of sending them abroad, that they may employ themselves in the building of other houses and the creation of other farms in lieu of those that they have abandoned; and the more houses pulled down, and the more farms abandoned, the more she grows in "prosperity," yet, with each such operation, her difficulties increase. Her whole energies are now devoted to getting up a show, and thus is the nation converted into a gigantic *Barnum*, with a gigantic museum, a new description of *machine*, invented for the purpose of attracting visiters, whose shillings paid for admission, and the sovereigns paid for the use of steamboats, rail roads, hotels, and other machines, will leave a profit after payment of the enormous expenses. It is an expedient to which she has been driven by the difficulties in which she finds herself involved. Of all the occurrences of the time, this one may be regarded as affording the most striking evidence that has yet been afforded to the world of the impoverishing and degrading effect of the devotion of the labor of a nation to the creation of machines—fleets and armies, ships and steamers, palaces and roads—at the cost of production. With each step she approaches nearer to bankruptcy, and the day cannot be distant when it must arrive—as has been but recently predicted by one of her own most intelligent bankers, a man indisposed to exaggerate the difficulties of the position of his country, yet equally indisposed to close his eyes to the fact that these difficulties exist, and must increase, as, from day to day, her labor becomes less productive.

Let the reader now fancy himself owner of an extensive property; and that, from year to year, he diminishes the number of persons productively employed upon it, increasing the number unproductively employed in building himself a castle and making pleasure grounds, filling his castle with pictures, his stables with horses, and his carriage-houses with carriages; and he will see that it will require but the lapse of sufficient time to place him in a position to be glad to be permitted to remain as showman of his own buildings and its pictures—the position in which England has already so nearly placed herself, with a daily increasing tendency to having the state of affairs grow worse, until

bankruptcy shall render it impossible for the present managers to continue their residence therein even on that condition. That country has, for centuries, been engaged in the work of making "great bargains", without "pausing" to count the real cost. India was such an one; but its acquisition tended largely to increase the number of persons unproductively employed at home, and to diminish production. So has it been with all her colonies. With each, the proportion borne by the producing classes at home to the unproductive ones, has diminished; for, with each, the castles required to be enlarged, the pleasure grounds extended, the horses, and carriages, and servants, and soldiers, and sailors, and ships of war, and steamers increased in number; and now she superabounds in machinery that is useless for the sustenance of her people, whose productive powers diminish from year to year, and she desires to remedy the evil by still further increasing her machinery, with *inevitable* further diminution of production.

Prone to follow in the train of England, we have ever shown ourselves ready to adopt her modes of thought, disclaiming even the notion of independence; and as she teaches the superior advantages of *machine-making* over production, we, of course, have adopted the idea. At times, however, we have determined to think for ourselves, and act for ourselves—as was the case near the close of Mr. Adams's administration, in 1828; but that exertion of independent thought was transient, and was followed by *machine-making* on a larger scale a few years later, the period commencing in 1835. A few years later, in 1842, was witnessed another effort at the assertion of the right of thinking for ourselves; but that again endured only until 1846; and now we have anew engaged in the trade of *machine-making* on a scale larger than ever before. With a view to show what have been the results of these different systems of policy, as exhibited in the increase or decrease of the productive power, and thereby to acquire the means of determining whether or not the state of things now existing is real "prosperity," or merely an *ignis fatuus*—a glare of fancied "prosperity" leading to certain bankruptcy and ruin, it is proposed to examine the movement of the nation during the periods subject to those several systems; to wit, that of the tariff of 1828, commencing with the fiscal year 1829–30, and ending with that of 1835; second, that of the compromise, ending 1842–3; third, that of the tariff of 1842, ending with the year 1846–7; and fourth, that of the tariff of 1846.

The reader has been requested to observe that nothing *can* be true as regards the action of a number of individuals constituting a nation, that would not be equally true of a single individual, and that one himself. In following this examination into the results of our various systems of policy, it is, therefore, to be desired that he should, in every case, look at them precisely as he would do if he and his family constituted the whole nation, of which they are only a part, and determine for himself which it is that he and they would prefer, were the whole product yielded by the labour of the nation their own property. This is broad ground to take in the consideration of a question involving interferences with trade, because we all know and feel that there exists an extreme indisposition to submit to any interference whatever, and that without good reason we would never do so voluntarily; and it is because of the existence of that knowledge and that feeling, that enlightened men, favorable to protection, have been compelled to deny that the same rules which applied to individuals were necessarily applicable to nations. In this, they have been wrong. The thing that is to be desired is, that every individual and every nation shall enjoy the most perfect freedom of trade, untrammelled by Custom House regulations, or by tariffs, whether for revenue or protection; and the question to be settled is: "What is the shortest, pleasantest, and most profitable—or what indeed *the possible*—mode

of reaching it?" It is the goal at which each man would, for himself, desire to arrive, and that at which the community should seek to arrive; and the policy of a nation is to be judged by its tendency in that respect alone. If the tariff of 1846 tends in the direction of *real* freedom of trade, then should it be preferred. If not, it should be rejected.

Freedom in the disposal of labour and its products results from increased productiveness of labour. Increase of trade results from increased power to produce things in which to trade. If the tariff of 1846 has tended to increase the power of production, then has it tended to increase the power to trade, with daily tendency towards increased freedom of trade; but if, on the contrary, it has tended to diminish the power of production, it has to a greater extent tended to diminish the power to trade, with daily tendency towards diminished freedom of trade. So, too, with that of 1842. By their works must they be judged. We need perfect freedom of trade, and increase of the power to trade; and one of the objects of the present inquiry, is to ascertain the direction in which they must be sought.

CHAPTER II.

At the date of the passage of the tariff of 1828, our production was very small indeed. We fed and lodged ourselves, but the consumption of cloth or iron was small, to a degree now scarcely conceivable. The domestic product of cotton cloth was but about five pounds per head, and the domestic consumption of cotton but about 100,000 bales; and the import of cotton cloth of foreign manufacture but little more than a pound per head; so that the nation was customer to the planters to but an extent not exceeding 140,000 bales. Of iron, we produced but little over 100,000 tons, and the import was about 40,000; giving a total consumption of about twenty-five pounds per head. But little food was then required at home to feed the few people engaged in producing this cloth and iron, and yet we had very little to exchange with other nations. The whole export of provisions, of every description, in the ten years from 1821 to 1830, had averaged only $12,634,000; while that of the three years prior and immediately subsequent to the passage of the act of 1828, was as follows:

1826–7	$11,685,556
1827–8	13,131,856
1828–9	12,075,430

The export of cotton, too, was trivial, ranging in the neighbourhood of half a million of bales. The domestic production of coal but little exceeded 100,000 tons; and yet our import was but about 30,000 tons.

It is obvious, from this, that production was small, and that, although we consumed but little cotton and made little cloth at home, and although our miners, and furnace men, and our mill operatives, consumed but little food at home, we had little to send abroad for the purchase of either cloth or iron.

Within four years from the date of the passage of that act,—that is to say, at the time of the passage of the compromise act,—the domestic production of iron has risen to above two hundred thousand tons, the increase having been about sixty per cent. From that time it ceased to grow, rail road iron having been freed from all duty.

The act of 1828 became fairly operative in the fiscal year 1829–30. The compromise moved at first very slowly,—the early reductions being slight,—

and its operation was unfelt before 1835; but it began then fairly to be realized, that within a few years all duties would fall to twenty per cent.; and from that date its influence becomes fairly perceptible. In considering the working of the tariff of 1828, it is proper, therefore, to include the fiscal year 1834–5, and, to some extent, the year 1835 itself.

Of the cotton crop raised in 1834, the domestic consumption was 216,000 bales; and that of wool had increased about twenty millions of pounds. Coal had advanced to about half a million of tons—having thus almost quadrupled; while iron remained at about the point it had reached in 1832. Here was, obviously, a vast increase of production. The labour given to the work of converting cotton into cloth, had almost doubled. The quantity of wool had increased fifty per cent., and the whole was being converted into cloth. The labour applied to the production of coal and iron, had more than doubled, and the average of all showed an increase of at least two-thirds, with an increase in the amount of production, resulting from the labour so applied, that cannot be estimated less than thirty millions of dollars, *or two and a half times the value of all the food, of every kind, exported in the previous years.*

It was then, as now, asserted that this was all a mere "waste of the national capital," and that iron and cloth would be obtained more readily in exchange for food or cotton sent abroad. To ascertain how far the facts tend to prove the existence of such "waste of capital," we may now inquire whether this increased amount of home consumption, was attended with an increased or diminished power of export. Doing so, we obtain the following results:

	Exports of Breadstuffs. Value.	Cotton. Pounds.	Tobacco. Hhds.	Rice. Tierces.
1829–30	$12,075,430	290,000,000	83,810	130,679
1830–31	17,538,227	277,000,000	86,718	116,517
1831–32	12,224,703	322,000,000	106,806	120,327
1832–33	14,209,123	325,000,000	83,153	144,163
1833–34	11,524,024	385,000,000	87,979	121,886

From this it would seem clear, that we had not only fed all the people employed in producing this cloth, and coal, and iron, and all those engaged in making the machinery, building the mills and furnaces, and opening the mines required for their production, and also the people employed in producing all this largely increased quantity of cotton and sheep's wool consumed at home, but had actually increased our export of food, while adding one third to our export of cotton. The productiveness of labour, had obviously and largely increased, and with it the reward of labour. There was a large increase in the quantity of commodities to be consumed, without a corresponding increase in the number of persons, by whom it was to be consumed. This rise in the return to labour, and this increased facility of obtaining food, clothing, and other necessaries of life, tended, of course, to produce a rapid influx of people from other countries, desirous to sell their labour, as will be seen by the following statistics of immigration:

1829–30	27,153
1830–31	23,074
1831–32	45,287
1832–33	56,547
1833–34	65,355

We have here a large increase in the number of persons to be fed and clothed; for the immigrant cannot, by any possibility, add to the quantity of

food, or of the raw materials of clothing, within the year following his arrival. Estimating the consumption of food, and clothing, and other commodities that represent the food and clothing consumed by those employed in their production, at $100 each, the quantity required for these immigrants in the last year would exceed, by four millions of dollars, that required in the first; and yet, while consuming all this, in addition to that required by the producers of cloth and iron, we exported far more than in the previous period. It would be difficult, as it appears to me, to find, in these facts, any evidence of "waste of national capital." We were consuming far more, and had far more to sell. Our people lived better, and the people of other nations desired to enrol themselves among our people.

Having more in quantity to sell, it will now be useful to ascertain the prices at which we sold, with a view to ascertain how far the increase of home consumption tended to diminish the necessity for sending abroad for a market for our vastly increased production. With that view, I now give the prices of our leading staples in one of our principal markets during these years—

	Flour.*	Beef.	Pork.	Tobacco.	Cotton.	Rice.
1829.....	5,62	7,62	10,75	66,65	10	$2\frac{5}{8}$
1830.....	5,25	6,00	9,87	56,40	$9\frac{1}{4}$	$2\frac{5}{8}$
1831.....	5,87	4,87	11,00	56,18	10	$2\frac{3}{16}$
1832.....	6,00	5,50	11,87	69,29	11	$2\frac{5}{8}$
1833.....	5,75	6,00	11,87	74,96	13	$3\frac{3}{16}$
1834.....	5,37	6,25	9,25	87,01	$16\frac{1}{2}$	$3\frac{1}{4}$

It is well known that supply affects price. Having greatly increased our production of food and cotton, the tendency was, necessarily, towards a fall of price in foreign markets, but it is here shown that that tendency was so fully counteracted by the increased domestic demand, that prices rose, instead of falling.

We had more to sell, and were obtaining better prices; and, as a necessary consequence, could afford to buy more of others; as will be seen by the following statement of imports :

	Salt.	Sugar.	Tea.	Coffee.	Pig Copper.	Coal.
	Bushels.	Pounds.	Pounds.	Pounds.		Tons.
1829–30.....	4,577,000	96,000,000	6,800,000	38,300,000	$412,000	54,000
1830–31.....	4,181,000	69,000,000	4,600,000	75,000,000	530,000	35,000
1831–32.....	5,041,000	48,000,000	8,600,000	36,000,000	752,000	66,000
1832–33.....	6,122,000	97,000,000	12,900,000	75,000,000	575,000	85,000
1833–34.....	6,038,000	115,000,000	13,100,000	44,000,000	586,000	67,000

	Iron.	Cottons.	Woollens.	Flaxen Goods.	Silks and other French Merchandize.
	Tons.				
1829–30.....	40,532	$ 7,862,000	$ 5,762,000	$3,011,000	$8,240,000
1830–31.....	51,243	16,090,000	12,627,000	3,790,000	14,737,000
1831–32.....	73,687	10,399,000	9,992,000	4,073,000	12,754,000
1832–33.....	79,961	7,660,000	13,262,000	3,132,000	13,962,000
1833–34.....	78,055	10,145,000	11,879,000	5,485,000	17,557,000

The circumstance here worthy of particular remark, by those who look to the growth of shipping as an evidence of "prosperity," is the vast increase, in the amount of return cargoes, of those commodities which could not be produced at home, to wit, passengers, and the raw products of other countries, needed for our consumption, all of them bulky commodities, requiring much tonnage for their transportation.

* The prices for the first three, are those of the market of New York, for the month of September of each year, as given in Hunt's Merchants' Magazine, Vol. VI. p. 474. Those of the three others are of the crops *raised* in the respective years.

Again, to those who desire to find, in the amount of exports, an evidence of "prosperity," this fact will be interesting, because of the facility thereby afforded for sending our own products to distant markets. Cotton, tobacco, flour, and rice, are bulky, and require much shipping, whereas cottons, woollens, and silks are compact, and require little shipping; and when our imports are in a great degree limited to these latter, the raw products exported must bear almost the whole cost of the double voyage. When, on the contrary, we import largely of men from Europe, and of coffee, tea, and the raw materials of manufacture, from other parts of the earth, the cost of the voyage is divided between the outward and inward cargoes; and if, by any course of policy, the import of men and of raw materials could be brought to exceed, in the quantity of tonnage required, that which would be needed for the transporting abroad of our products, the effect would be to throw upon the imports almost the whole cost of the double voyage, and, of course, to raise the price of the commodities we had to sell, and lower that of those we had to buy. We should then be *really* buying in the cheapest and selling in the dearest market; whereas, when the exports are bulky and the imports compact, the price of the former is reduced by almost the whole cost of the double voyage, while the latter pays scarcely any freight; and then we are selling in the cheapest and buying in the dearest market. To ascertain to what extent the former effect was produced in the period now under examination, the result in the augmentation of shipping is here shown:

1829–30	58,000	tons*
1830–31	85,000	
1831–32	144,000	
1832–33	161,000	
1833–34	118,000	†

How far the public revenue was benefited by the vast increase that had taken place in the productive power of the country, may now be shown.

The average receipt from customs in the two years ending 1828–9	$24,800,000
That of the year ending Sept. 30, 1830, was	24,844,116
" " 1831, "	28,526,820
" " 1832, "	31,865,561

So large had the revenue become, that tea, coffee, silks, and other important foreign commodities were now, for the first time, made duty free, and yet the revenue of the following year was as follows:

Year ending Sept. 30, 1833	$33,948,426
In the next year, the agitation resulting from the removal of the deposits caused a large reduction, and it fell to	$21,791,935
To rise, in the following year, ending Sept. 30, 1835, to	35,430,087

Up to this time, the amount of debt contracted abroad was small, and this large amount of foreign imports was paid for, almost entirely, by our exports. Our ability to be customers to foreign nations had largely increased.

It is impossible, as it appears to me, to study the history of the period which intervened between the passage of the protective tariff of 1828, and that at which the compromise act of 1833 began to make itself felt, without arriving at the conclusion, that the productive power of the country increased

* The average of the two years previous, was 70,000.

† The diminution in this year is to be attributed to the agitation which followed the removal of the deposits. The effect of that measure may be seen in every portion of the transactions of the year.

in a most remarkable degree, and that the ratio of its growth was greater from year to year. The domestic market had increased largely, and yet the power to furnish commodities for export had also largely increased, and the reward of labor had risen so much as to afford inducements for the transfer of the laborers of Europe to our shores, thus making a constant increase in the markets for the production of our own ploughs, our own looms, our own anvils, and for those of foreign ploughs, looms, and anvils, to be carried in our own ships. It was the first period in our history that we could be said to enjoy credit abroad; and for the plain and simple reason, that it was the first in which we had fairly tested the truth of the idea, that "In union there is strength." Prior to that time, men had been constantly flying from each other, because the centrifugal force was greatly in excess of the centripetal, and now, for the first time in the history of the nation, the two forces were seen to balance each other, concentration taking the place of dispersion.

THE GREAT INDUSTRIAL EXHIBITION ON JOHN BULL'S OWN DUNGHILL FOR HIS OWN BENEFIT.

English writers continue to repeat the libel of the Count Buffon, that the animal and vegetable productions of the New World, are decidedly inferior to those of the old, of the same species.

A certain Mr. Knox, M. D., lately, in the most indecorous manner, attacked our countryman Fenimore Cooper, for his comparison of the Hudson with the Rhine. We could never get the English to bring over any of their crack horses to run or go against ours, with our weights and *distances*—but they challenge the world to an industrial exhibition on their own ground. After having by the monopoly of machinery, and the curse of *cheap labor*, and by the supremacy of their navy, kept the world for ages in colonial bondage, they now say "Come here if you dare, and compare with us on our own ground." Thus, if foreign nations don't send as many and as good things as they can produce on the spot, the inference will be—inability to compete—deficiency of ingenuity, enterprize, &c. Such will be the impressions that will go abroad over the world.

AGRICULTURAL IMPLEMENTS TO BE EXHIBITED AT THE WORLD'S CONVENTION.

Among the world-renowned implement-makers, are Messrs. Garrett & Son of the Leiston Works, England. They have engaged 4,000 superficial feet; Ransomes & May, 5000; and others, a large area, for the display of *Agricultural Implements*. Three firms at least from the country in which these gentlemen live, have announced their intention to exhibit *portable locomotive steam-engines*, for agricultural purposes.

The late English "Agricultural Journal," in which are found this statement, says further; which we copy for the eye of our *agricultural implement-makers* generally; a class of artizans to whom farmers are more indebted than they sometimes seem to be aware of.

"The Messrs. Ransomes and May also apply for 2,000 feet, for the exhibition of machinery and apparatus connected with railway purposes. In this department we anticipate the most interesting feature will be the unique machinery for the manufacture of trenails, or, as they are popularly called, railway pins or chair fastenings. If the various processes could be illustrated by actual demonstration, to which we are not aware that any objection will exist, the operation will form one of the most attractive sights in the department of mechanical economy that can be possibly presented to the visitors."

The writer says this county (Suffolk,) "produces a peculiar kind of hop, differing

much in character from the growth of Kent, Surrey, and Hereford: how is it that this article is not represented?"

"Witham.—It would seem that the neighborhood of Witham is not to be altogether unrepresented in the forthcoming Industrial Exhibition, the following claims for space having been transmitted through the local committee: By Messrs. Smith and Son, of Witham, (and of Peasenhall, Suffolk,) patent corn, seed, and manure drill manufacturers, 1,500 feet of floor, and an average height of six feet for exhibiting drill. We may remind our readers that this is the oldest drill manufactory extant, and to which the celebrated Suffolk drills owe their origin."

English drills, imported into Delaware, were found to be too cumbersome and expensive for general use in this country, and were accordingly much simplified and cheapened by Mr. Pennock and others, and as we have understood, the American, proved equally or more efficient. Now if none of these American inventors or improvers, should be at the trouble and expense of sending over their improved drill, no doubt we shall have it reported that England can beat the world in drills. We can't plead any thing in excuse for deficiency, after praising the Fair every where and putting the navy in requisition to aid us in the competition. We shall see what they will say about Pennock's horse-rake which they have adopted.

"Mr. Ponder, of Goldhanger, has claimed space for a new description of bee-hive, constructed of glass and wood; and Mr. Mechi has claimed space for a model of Tiptree Hall Farm, which, if we may venture an opinion, will not prove one of the most uninteresting objects of the Exhibition. The commissioners have already found it necessary to intimate that in consequence of the extraordinary number of claims sent in from all parts of the world, intending exhibitors must hold themselves in readiness to submit to some curtailment of space, where it can be effected without detriment to their interests.

"Fine Spinning.—A commercial house in Manchester is spinning a pound of cotton for the Great Exhibition of 1851, in length *two hundred and thirty-eight miles and one thousand one hundred and twenty yards*, being the finest ever yet produced. It is thus calculated: There are 80 layers of one yard and a half each in a warp, 7 warps in a hank, and 500 hanks in a pound of cotton. Those most conversant with the details of cotton-spinning can best appreciate the value of the machinery and the talent displayed in so wonderful a production."

EMIGRATION TO TEXAS.

Within the last two months, two ships have sailed from Liverpool, taking out nearly 300 persons, consisting of farmers, laborers, clergymen, and military men, their destination being Milan county, in Texas, the present property of the Universal Emigration and Colonization Company. On arriving at Galveston, the port of debarkation, the emigrants are met by one of the directors of the company and the superintendent, and the means of conveyance and comfort are found for them. One of the features attaching to the plan is, that the emigrant need not cripple his resources by immediate purchase of land, but by paying five per cent. per annum on the amount of purchase money, he may retain the freehold right and titles for himself and family, and when his means admit of it take the land off the hands of the company. The land is prairie, and sells at 6s. an acre. The emigrant has the option of choosing his land on arrival out. A ship will be laid on soon from London. The passage money is very low. The ships gone from Liverpool are the John Garrow, 800 tons, and the City of Lincoln, 1,200 tons.—*London Sun, Oct.* 29.

The Proper Season for Planting Evergreens.—I believe that there cannot be a more mistaken practice than the common one, of planting evergreens at the same season as deciduous trees. However contrary to received opinion it may be, I do not hesitate to say, that the worst months for planting evergreens are December, January, February, and March; and the best, June, July, August, and September. Even in a dry summer, evergreens run little danger, if the planter will take the trouble of throwing a good souse of water into the hole before planting.—*S. B. Dorking.*

IMPORTATION OF ENGLISH CATTLE INTO KENTUCKY AND OHIO, WITH REMARKS.

BY THE EDITOR OF THE "PLOUGH, THE LOOM AND THE ANVIL."

The ink was scarcely dry, with which we expressed for our last number, the hope of receiving some particular and authentic account of the patriotic association of certain gentlemen in Ohio, to import English cattle, when the mail brought us the following sketch of it, from the Hon. J. L. Taylor. We sincerely rejoice that a project so well suited to advance the agriculture of that growing sister of the Republic, and, we may add, so much in advance, at that time, of the general spirit of their profession, should have been so well rewarded; for however men may differ in opinion, as to the peculiar adaptation of particular races of animals of the same species, to particular soils and localities, none can doubt the absolute fitness of Kentucky and Ohio, to a race of cattle so remarkable as the improved short-horns, for very early maturity, and for storing their weight in the prime pieces. If cattle built up and constructed as this breed has been, by judicious crossing and a skilful selection of breeders, at whatever cost, be not destined for a *blue grass and a corn country*, for what region were they made? Kentucky took the lead in the race of agricultural enterprise in this line, almost before her young sister of the buckeye was born, and is therefore entitled to the credit of having been the first of the western states as well in the formation of agricultural societies, as in the importation of improved breeds of cattle.

It is due to their public spirit to record the fact, in this connection, that as far back as thirty-four years since, Lewis Sanders, Captain William Smith, and Dr. W. H. Teagarden, ordered the cattle mentioned in the following invoice :—Mr. Clay imported both Herefords and Short-Horns in the same ship, or at the same time, and took premiums at the second Agricultural Fair, held in September, 1819, in Lexington, as well for his imported bull "Ambassador" of the Hereford breed, as for a bull-calf by Ambassador, got on an imported cow. Mr. Clay has, in fact, been all his life doing the best he could to improve and advance the domestic animals, and the domestic industry of the country; and although he may leave us without having been called to the highest political trust, that will have been his country's concern, not his; yet would it not be still more deplorable to have such a man retire from the stage with "shadows, clouds and darkness" hanging over the *Union?*

The "long-horn" breed, imported into Kentucky, was of what was called the *Bakewell* breed. The English agricultural annals tell us that Mr. Princeps in 1809, refused 1500 guineas for the season of one of his bulls to only 30 cows. Some sixty or seventy years ago, Mr. Patton, living on the south-branch of the Potomac in Virginia, purchased an English bull of this long-horn or "beef" breed, and some years after a cow of the short-horn, or "milk-breed," and about the same time Mr. Miller of Augusta county, Virginia, imported a bull and cow of the same breeds, and the cross of these produced a large breed of fine cattle, which was taken under the name of the Patton breed to Kentucky, and formed the basis of that fine race of cattle from which, as we were informed by Mr. Steenbergen many years ago, the graziers in the valley of Shanandoah were afterwards supplied with bullocks.

Invoice of cattle shipped on board the Mohawk, for Baltimore, consigned to Messrs. Hollins and M'Blair, Merchants there.

1 Bull from Mr. Clement Winston, on the river Tees, got by Mr. Constable's bull, brother to Comet.
1 Do. Holderness' breed, of Mr. Scott, out of a cow that gave 34 quarts of milk per day, large breed.
1 Do. from Mr. Reed, West Holme, of his own bull.
1 Bull Holderness breed, from Mr. Humphreys, got by Mr. Ware's bull, of Ingleton.
1 Do. Long-Horned breed, by Mr. Jackson Kendall, out of a cow that won the premium.
1 Do. Long-Horned, from Mr. Ewartson, Crosby Hall, is of a very fine fat breed.
1 Heifer, from Mr. Wilson, of Standrose, Durham breed.
3 Do. from Mr. Shipman, by the river Tees, his own breed.
2 Do. Long-Horned breed, from Mr. Ewartson, Crosby Hall, of the Westmoreland breed.

Cost, delivered on board the ship, 345*l.* 14*s.* 5*d.* sterling, or	$1536 50
This money was sent from Kentucky to New-York when exchange was 8 per cent. in favor of New-York, and 8 per cent. in favor of England, making 16 per cent.,	245 00
Freight and all expenses to Baltimore,	1550 00
	$3331 50
Insurance could not be effected under 33⅓ per cent.	1110 50
Expenses from Baltimore to Kentucky,	500 00
	$4942 00
Insurance out to Kentucky, being greater than across the sea, one having died and another lame, and left in Maryland, say 33⅓ on $4242,	1647 33
	6689 33
Commissions to agents, and postage,	100 00
	$6589 93
Cost of each,	$557 44

These cattle were shipped by Smith, Buchanan & Co., at Liverpool, in March, 1817, consigned to the late John Hollins, Esq., of Baltimore, of whom it is enough to say he was every inch a gentleman in spirit and bearing, no less than in looks. They were landed all safely in Baltimore, on the 1st of May, 1817, under the care of John Row,* herdsman.

Prior to the improvements introduced by Bakewell in England, people judged of the value of animals by their bulk; and more regard was paid to the price they would ultimately fetch by their weight, than to the cost of producing them. But since his time and example, men begun to calculate with more precision, and to see that the profit must depend on pastures, market, taste, &c. And though the intelligent breeder will prefer a moderate size in his domestic animals unless his pastures are rich, and his granaries overflowing; under every view, the projectors and promoters of the Kentucky and Ohio Company displayed much judgment and energy in their undertaking. That 's the sort of "heroism" that confers real benefit on a nation.

As it requires much experience to ascertain the nett weight of cattle by sight while yet alive, the following has been given as a rule, which, though not absolute, may yet assist the judgment of the inexperienced.

Take the girth of the animal by measuring round with a string close behind the shoulder blade, and the length, by measuring from the fore-

* Had the name of this humble man come down to us in military annals, for some feat of blood in an aggressive war, we should not be so particular in giving it.

part of the shoulder blade, along the back, to that bone of the tail which is in a perpendicular line with the hind part of the bullock. Multiply the girth, (in feet) by itself, and that product by the length, and then again by 42; the last product if divided by 100 will give the weight in Smithfield stones of 8 lbs. each; which being multiplied by 8, will, of course, give the weight in pounds, as sold in this country.

Of the origin of this celebrated breed of "improved short horns," not much to be relied on is known, or needs to be known, prior to 1777, in which year the famous bull Hubback, the great root of the short horns, and the fruit of a cross, was calved. When a calf, he was sold to Charles Collins, an English breeder, who, by great perseverance and judgment exercised in the selection of his breeding stock, built up the breed to its great excellence, and what does not always happen, with those who lead the way in such improvements, he realized the fruits of his enterprise.

Sale of Short Horns in England, in 1802, and in 1850.—We learn from Bayley's Survey of Durham, that in 1802, Collins' cattle sold,

			£	s.			Guineas.
17	Cows	for	2802	9	highest price,	- -	410
11	Bulls	"	2361	9	" "	- -	1000
7	Bull calves	"	687	15	" "	- -	170
7	Heifers	"	942	18	" "	- -	206
5	Heifer calves	"	321	6	" "	- -	106
47	cattle sold for		£7115	17	or for an average of above		$650

At this sale was sold the famous bull Comet, (calved in 1804, and died in 1815) for 1000 guineas, and it is said, 1600 guineas were offered for him afterwards. In 1818, Robert Collins' stock of the same breed was sold at the following prices:

			Guineas.			Guineas.
34	Cows	for	4141	highest price,	- - -	371
17	Heifers	"	1287	" "	- -	331
6	Bulls	"	1343	" "	- - -	621
4	Bull calves	"	713	" "	- -	270
61	head of cattle for		7484	guineas, say $597 average.		

It will have been seen in our last, that those imported by the Editor of this Journal into Maryland, were sold, the bull and two heifers, for $500 each.

The most recent sale in England that has fallen under our notice, was on the 5th day of November last, property of the late Sir Thomas Cartwright, as follows:

30 Cows and heifers, £1120 10s.; a cow of 6 years old, bred by that distinguished and lamented, plain, practical farmer, Earl Spencer; (got by Upstart) for $110.5, the whole averaging about $187.

HISTORY OF THE ORIGIN AND PROCEEDINGS OF THE OHIO CATTLE IMPORTING COMPANY.

Chillicothe, Ohio, 16 *Nov.,* 1850.

Sir:—At the request of several gentlemen, members of the Ohio Company for importing English cattle; I send you herewith, a short account of their importations and sales of English cattle, from the year 1833 to 1837, to be published in your valuable paper, "The Plough, Loom and Anvil." Very respectfully your ob't serv't,

JOHN L. TAYLOR.

J. S. Skinner, Esq., Philadelphia.

HISTORY OF THE OHIO COMPANY FOR IMPORTING ENGLISH CATTLE.

On the 2d November, A. D., 1833, Governor Allen Trimble, George Renick, Esq. and General Duncan McArthur, citizens of the State of Ohio, for the purpose of promoting the interests of agriculture, and of introducing an improved breed of cattle into this State, formed a company, and they, together with the subscribers hereafter named, to the written articles of their association, contributed the amount of money necessary to import from England, some of the best improved cattle of that country.

The sum of $9200, was very soon subscribed for that purpose, in 92 shares of $100 each; and after making the necessary preliminary inquiries and arrangements, the company appointed Felix Renick, Esq., of Ross County, Ohio, their agent for the purchase and importation of said cattle.

Mr. Felix Renick was accompanied by Messrs. Edwin J. Harness, and Josiah Renick, of Ohio, as his assistants, and they left Chillicothe for England, on the 30th January, 1834.

The following persons were subscribers to the stock of said company, on the 25th day of January, 1834, viz:

Allen Trimble,	5	shares	$500
George Renick,	6	"	600
Duncan McArthur,	6	"	600
John J. Van Meter,	2	"	200
R. R. Seymour,	2	"	200
Edwin J. Harness,	2	"	200
Arthur Watts,	3	"	300
Robert Stewart,	1	"	100
Strawder McNeil,	2	"	200
Preslay Morris,	2	"	200
James Vanse,	1	"	100
Evan Stevenson,	1	"	100
Thomas Huston,	3	"	300
John McNeil,	3	"	300
John M. Alkive,	1	"	100
Elias Pratt,	1	"	100
William Renick, junr.	2	"	200
Josiah Renick,	1	"	100
Thomas Renick,	1	"	100
George Radcliff,	1	"	100
Elias Florence,	1	"	100
Asahel Renick,	2	"	200
Felix Renick,	2	"	200
H. P. Galloway,	1	"	100
John Boggs, senr.	1	"	100
John T. Webb,	2	"	200
Batteal Harrison,	1	"	100
A. Hegler & M. Paterson,	1	"	100
Wesley Claypoole,	1	"	100
Archibald Stewart,	1	"	100
Joseph G. White,	1	"	100

John Pancake, senr. - -	1	shares, - -	$100
Bodkin J. Davis, -	1	" - -	100
Charles Davis, - -	1	" - -	100
Asahel Renick & E. Pratt,	1	" - -	100
E. W. Gynne, - -	1	" - -	100
M. L. Sullivan, -	1	" - -	100
Lyne Starling, - -	2	" - -	200
S. S. Denny & Wm. Renick,	2	" -	200
M. McCrea, assign to Harness Renick,	1	" - -	100
Jonathan Renick, - -	3	" - -	300
Francis Campbell, -	1	" - -	100
William Renick, - -	1	" - -	100
John L. Taylor, -	1	" - -	100
John Crouse, - -	1	" - -	100
John Foster, -	1	" - -	100
R R. Seymour, for W. H. Cunningham, of Virginia, -	4	" - -	400
James Vanse, for Isaac Cunningham, of Kentucky, - -	8	" - -	800
No. of shares,	92		$9200

Mr. Felix Renick, and his assistants, Messrs. E. J. Harness and Josiah Renick proceeded to England, and made a careful examination of much of the improved stock of that country, purchased from some of the most celebrated and successful breeders of cattle in England, about nineteen, at various prices, consisting of bulls and cows, of the *thoroughbred short-horned Durham stock.* They brought these to Ohio, and returned in time to exhibit them at the Agricultural Society of Ross County, on the 31st day of October, 1834.

This stock of English cattle, was kept together, under the care of an agent, by said company, and they *increased the number by additional importations from England, until the 20th day of October, A. D.* 1836; when the cattle imported, as well as the natural increase thereof, since the 31st October, 1834, were sold at public auction, under regulations adopted by the company.

The following extract from "The Scioto Gazette of October 26th, 1836," will show the names of the purchasers, and the prices the stock brought at public sale:

GREAT SALE OF DURHAM STOCK.

Imported by the *Ohio Company for importing English Cattle*, in the years 1834, 1835 and 1836:—held at Indian Creek Farm, the residence of Felix Renick, Esq., Agent of the said Company in Ross county, on the 29th day of October, 1836. The Stock of the Company was in fine condition and in great demand.

Notwithstanding the high prices at which the cattle were sold some of them exchanged owners immediately, at very considerable advances; and for others, more than 50 per cent. on their cost were offered and refused.

Reformer, a bull, not sound, sold to John T. Webb, of Ross county, O., for	$48
Matchem, a bull, sold to Abraham Renick, of Kentucky, for - -	1,200
Earl of Darlington, sold to Batteal Harrison, of Fayette county, O., for -	710
Young Waterloo, a bull, sold to R. D. Lilley, of Highland county, O., for -	1,250
Duke of York, a bull, sold to R. R. Seymour, of Ross county, O., for -	1,120
Experiment, a bull, sold to James M. Trimble, of Highland county, O., for -	1,150
Comet Halley, a bull, sold to R. R. Seymour, of Ross county, O., for -	1,505
Whitaker, a bull, sold to Wm. M. Anderson, of Ross county, O., for -	855
Nimrod, a bull, sold to Elias Florence, of Pickaway county, O., for -	1,040
Duke of Norfolk, a bull, sold to Robert Stewart, of Ross co., O., for $1,225, afterwards sold at private sale to Governor Vance and J. H. James, of Champaign county, for - - - - -	1,400
Goldfinder, a bull, sold to Isaac Cunningham, of Kentucky, for - -	1,095
Duke of Leeds, sold to John Crouse, jr., of Ross county, O., for -	575
Windham, a bull, sold to Charles Davis, of Ross county, O., for - -	500

Columbus, a bull, not sound, sold to Thomas Huston, of Pickaway county, O., for - - - - - - - $180
Davy Crocket, a bull, sold to Peter L. Ayres, of O., for - - 490
Snow-Drop, a bull, sold to Stewart and M'Niel, of Ross county, O., for - 480
Independence, a bull, sold to Hegler and Peterson, of Ross county, O., - 400
Perry, a bull, sold to William H. Creighton, of Madison county, O., for - 400
Goliah, a bull, sold to Isaac V. Cunningham, of Scioto county, for - 300
Logan, a bull, sold to Elias Florence, of Pickaway county, O., for - 750
John Bull, a bull, sold to William Renick, jr., of Pickaway county, O., for - 615
Paragon, a bull, presented by the Company to Felix Renick, Esq., their agent.
Powhattan, a bull, sold to George Renick, sen., of Ross county, O., with Flora.
Rantipole, a bull, sold to Arthur Watts, of Ross county, O., for - - 810
Gaudy, a cow, sold to James A. Trimble, of Highland county, O., for - 985
Blossom, a cow, sold to R. R. Seymour, of Ross county, O., for - - 1,000
Flora and her calf *Powhattan*, were sold to George Renick, sen., of Ross county, O., for - - - - - - 1,205
Lily of the Valley of Tees, sold to Thomas Huston, of Pickaway county, O., for - - - - - - 950
Matilda, sold to Arthur Watts, of Ross county, for - - - 1,000
Calypso, a cow, sold to Strawder M'Niel, of Ross county, for - - 325
Young Mary and her calf *Pocahontas* were sold to Edwin J. Harness, of Ross county, for - - - - - - 1,500
Lady Blanch, (no proof of this cow being a breeder,) sold to Charles Davis, of Ross county, for - - - - - 250
Teeswater and her calf *Cometess*, sold to John I. Van Meter, of Pike county, O., for - - - - - - 2,225
Duchess of Liverpool, sold to William M. Anderson, of Ross county, O., for 570
Lady Colling, (it is doubted whether this cow will ever be a breeder,) sold to John T. Webb, of Ross county, for - - - 205
Beauty of the West, sold to Asahel Renick, of Pickaway county, O., for - 900
Lilac, sold to Elias Florence, of Pickaway county, O., for - - 425
Lady of the Lake, sold to R. R. Seymour, of Ross county, O., for - 775
Lady Paley, sold to Alexander Renick, of Ross county, O., for - - 510
Poppy, sold to Harness Renick, of Pickaway county, O., for - - 610
Pink, sold to William Trimble, of Highland county, O., for - - 575
May Flower, sold to Batteal Harrison, of Fayette county, O., for - 405
Lucy, (pedigree doubtful,) sold to George Ratcliff, of Pickaway county, for - 405
Moss Rose, sold to Jonathan Renick, of Pickaway county, for - - 1,200
Celestina, sold to T. Huston, of Pickaway county, for - - 930
Malina, sold to Isaac Cunningham, for - - - - 1,005
Illustrious, sold to Abraham Renick, of Kentucky, for - - 775
Lady Abernethy, sold to Thomas Huston, of Pickaway county, O., for - 815

ATTEST, JOHN L. TAYLOR,
Secretary of the Ohio Importing Company.

On the first of April, 1837, at a meeting of said company at Chillicothe, upon a settlement of the business of the company, a dividend of $280 per share was declared on the 92 shares of the stock of said company, amounting to $25,760 00.

This company held their last meeting on the 15th April, 1837; and settled finally the business thereof so far as was practicable, by ordering a second sale, which was held as follows:

"*The Highest Prices Yet.*"

Seventeen head of Improved Short-Horned Cattle, belonging to the Ohio Company, being mostly of this year's importation and the produce of others, took place at the Sugar-Grove in this town on Tuesday last. The attendance was numerous, comprising a larger number of actual bidders than the previous sale. Among the individuals present who are pre-eminently noted for their agricultural enterprise, were Governor Vance, Ex-Governor Trimble, the Messrs. Renick, Mr. Sullivant, and indeed nearly all the large farmers of this Valley and the adjacent country. The bidding was consequently very spirited, and the prices obtained for the cattle plainly show that the kind of stock sold is rapidly advancing in public estimation. By the following list from the Auctioner's book, our brethren of the press will discover that the cattle enumerated were even more highly valued than those of the *sham sale* they were of late parading in their columns, copied from the Cincinnati Gazette."

BULLS.

Acmon, three years eight months, M. L. Sullivant & Co., Columbus,	$2,500
Comet Halley, five years, George Renick & Co., Chillicothe,	2,500
Hazlewood, one year six months, Allen Trimble and R. R. Seymour,	700
Bouncer, one year seven months, John Walke, Pickaway county, O.,	453
Powhattan, one year nineteen days, Harness Renick, Pickaway county, O.,	500
Santa Anna, three months twenty-one days, Joseph C. Vance, Ohio county, Va.,	425

COWS.

Flora, seven years six months, M. L. Sullivant, Columbus,	$1,300
Matilda, six years six months, Allen Trimble, Highland county, O.,	1,220
Fidella, seven months eighteen days, Allen Trimble, Highland county, O.,	610
Elizabeth, (and calf,) five years, J. & Wm. Vance, Champaign county, O.,	1,450
Charlotte, four years seven months, Joseph G. White, Ross county, O.,	630
Arabella, (and calf) three years seven months, Arthur Watts, Chillicothe,	1,200
Blush, two years nine months, John H. James, Champaign county, O.,	1,015
Emily, two years eight months, Asahel Renick, Pickaway county, O.,	875
Victoress, one year nine months, M. L. Sullivant, Columbus,	700

Very great benefits have resulted to the country by the introduction of this improved English Durham stock into the state of Ohio, by this company.

An improved breed of cattle throughout the State has resulted from crossing the English stock with the common stock existing at that time; and a very fine, large and thrifty race of cattle in many parts of Ohio, has been bred by this laudable enterprize. Some of their full-blood bulls and cows have been sold to farmers of the adjoining States; and thus the benefits of their importations, have contributed largely to improve the stock of cattle in the western country.

Mr. George Renick of Ross county, has bred from a portion of the stock imported by said company, and the common cows of Ohio, a very fine race of cattle; and for the last six years as he states, he has annually sold about 50 or 60; the average weight of which at from three to four years old, was about 1000 lbs nett. Some of them weighed as much as 3000 pounds, and one (older) as high as 3400 pounds, gross.

Ex-Governor Allen Trimble of Highland county, Doctor Arthur Watts, of Ross county, M. L. Sullivant, Esq., of Franklin county—(all well known as amongst the most successful farmers and stock-growers in Ohio)—besides many others of this company, have contributed largely by their skill and enterprise to increase and diffuse the improved breed of cattle, resulting from the importations of the company, into every part of this State.

Doctor Watts, at the last Agricultural Exhibition in Ross county, in 1849, exhibited 8 two year old steers, averaging 1526 lbs. each; and at the State Agricultural Fair at Cincinnati, held in 1850, he exhibited amongst other cattle, one four year old steer, (full-blood Durham) weighing 2550 lbs. gross; and one three year old steer, weight 2220 lbs. gross. These weights are given to show the enormous weight which this Durham stock of English cattle attain at an early age when bred by skilful and intelligent farmers; and they show also, the great value of breeding from this stock to those who are engaged in furnishing the beef markets of our country.

Cotton Spindles of the World.—The London "Examiner" gives the following table as an estimate of the number of spindles engaged in the cotton manufactory throughout the world:—Great Britain, 17,500,000; France, 4,300,000; United States, 2,500,000; Zollverein States, 815,000; Russia, 700,000; Switzerland, 650,000; Belgium, 420,000; Spain, 300,000; Italy, 300,000. Total, 28,985,000.

MARYLAND HUSBANDRY.

AN ATTEMPT TO COME AT THE AVERAGE PRODUCE OF HER CHIEF STAPLES IN THE SEVERAL COUNTIES.

BY THE EDITOR OF THE "PLOUGH, THE LOOM AND THE ANVIL."

So defective are the best materials we could procure in an attempt to approach accuracy, as to the average produce per acre of the principal staples in the several counties of our native State, that we have been hitherto deterred from proceeding with the task; yet it seems proper that we should do so, were it only as a grateful acknowledgment to the gentlemen who lent us their assistance.

It is further to be remarked, as a matter to be lamented by all who desire, in such industrial investigations, to dive below the surface, that states which have expended so much time at the farmer's expense, and evaporated so much of the steam of patriotism, in tinkering their laws and constitutions, should yet never have made any reliable provision for *appropriate* education for those who are to be the future cultivators of their soil; nor any the least attempt at obtaining, as they might, through statistical Bureaus, periodical, (say decennial,) and accurate returns of the products of their industry and the sources of their wealth; their productions in grains and vegetables; their domestic animals for food and labor; their cultivated and timber lands; their mines, minerals and fisheries, &c., as well as their popular, educational and sanatory statistics.

Is it not the bounden duty of every organized community, that aims at wise legislation, to procure periodically all such facts in the most authentic form, for the guidance of those it invests with what ought to be regarded as the sacred duty of legislation? What the lancet and the scapula are to the physician, or the axe and the plough to the farmer, such facts are to the legislator. All experience, all history teaches us, that the virtues of a nation, its humanity, its courage, its refinement of manners, its prosperity depend on its natural resources, and on the *excellence of its laws.* Wise and good laws never lighted the torch of intolerance: never strewed the plains with dead men's carcasses; never drenched the fields with blood. No, it's not *enlightened legislation* that ever burns cities and lays empires waste; but how can legislation be pure or wise where education—appropriate education—is neglected, and law-givers are destitute of the means of knowing the capabilities of the State, and the actual condition and products of its industry?

This duty to provide, each state for itself, the means of ascertaining its products and resources, is more particularly incumbent and obligatory on those States whose political ethics would lead them to circumscribe strictly, *as they should do,* the powers of the general government. Such authentic statistics are in fact essential, not only to the interest, but to the self-respect of States that pride themselves on the privilege and power of self-government. Instead of which, we see that those who most deprecate foreign surveillance and interference in their domestic concerns, are among those who most neglect the means which all must admit to be indispensable to an enlightened management of their own affairs. These are the communities which most especially rely on the General Government to inform them of their own sources of wealth and means of defence and aggrandizement.

In Massachusetts and New-York, and lately in Louisiana, provision has been made for exact returns, at decennial periods, intermediary between the national census. Accordingly, when the political inquirer, the

statesman or the legislator, wishes to see the progress of industry in any particular branch of it, and the wants of particular classes; when he wishes to see what interest is suffering, and which prosperous; he has at hand the data by which only can he do any thing except, as in most of the States—guess! guess! or go to the general government's hitherto vague and loose returns.

It was under these circumstances, that, being last year accidentally present in Maryland, at a meeting of zealous and distinguished friends of the plough—(we don't mean *this* plough)—to deliberate on the means of agricultural improvement, and witnessing their laudable anxiety to have a vast multitude of men and things assembled for a grand show, we could not forbear deploring, as necessary to a broad and solid foundation for general improvement, the absence *of all authenticated data*, by which to form an accurate judgment as to what *is* and what has been, the present and past condition of Maryland husbandry, and the available resources for its advancement.

To know how to treat a disease, the first step is to find out the seat of it. How can any man say that a State is prosperous or declining; its wealth augmenting or diminishing; how judge of its capabilities, when all is guess work, and nobody can tell what are the products or profits in the aggregate, of its labor and capital, either at the present time, or as compared with any given period of past time? As well might you expect a chemist to proceed with his analysis, without retort or crucible!

But good and wise men of Maryland are now in convention to *amend (?) their constitution.* May we hope that among its first fundamental principles will be some thing that looks to more common sense, general and *appropriate education for the sons of farmers and planters;* and for periodical returns of the resources and industry of the good old common wealth.

They have there, under their eyes, one of those magnificent establishments, maintained at the cost of the farmer and planter, for which are expended some hundreds of thousands annually, for instruction in the game of war; kept up throughout the world, to resist the power and disposition of England to bring the world yet more completely under subjection to the "policy of British merchants." Let us see now, when a new government is to be reared from the very foundation, whether any thing, and what will be done, to secure sound and *suitable* instruction *in the use of the plough;* without which, what would become of the armies and navies for which we now pay $20,000,000? Yes, twenty millions, to men whose sole employment is, to *carry swords and muskets!* or will the great aim of the convention be, to see which *party* can set the most cunning and effective *popularity traps!* For it seems that party spirit, like the plagues of Egypt, insinuates itself now-a-days every where, even into conventions to frame organic laws.

Well! to return to our subject. Under the circumstances above mentioned, we concluded, (vain if not presumptuous as the effort might appear,) that we would ourselves make an attempt, however rude, to come at the *actual condition* of the farming interests of the State, as respects some of her principal productions. And here be it remarked that, however inadequate and discouraging may have been the results, that has not arisen from any thing necessarily defective in the means proposed, so much as from that unconquerable lethargy on the part of those to whom the most respectful application was made in every election district in the State, for assistance in the prosecution of an inquiry of vital interest *to themselves.* A lethargy which is itself a part and a proof, of that general stagnation, which always ensues and ever must ensue, when men adhere exclusively

to a single pursuit already over stocked; when customers and producers are widely separated from each other; when wagons and ships, and factors clerks and porters, take the place of the plough and the harrow, the loom and the anvil, the lap-stone and the trowel; when, in a word, under a deleterious policy of government, men are *scattering* to avoid starvation, instead of coming together and *combining* their powers for physical and social melioration. Under such circumstances men will always be found careless and lethargic. The most sensitive man, if solitary and alone in a theatre, would listen comparatively without emotion, to the noblest performance on the stage—even to old Kean, if alive, in one of Othello's magnificent soliloquies; but fill the house;—boxes, pit and gallery, and he becomes at once transported! Sympathy is a social virtue.

The hope of steady reward to labor, begets industry, the parent of agricultural improvement; but when men, all at the same employment, begin to starve by competition, and, for relief, begin to separate and desert each other, hope takes flight, and despair and decay take the place of genius and industry. Improvement is no longer to be seen. Nothing would be easier than to demonstrate all this, and to give it practical application to the subject in hand, but that it would lead us wide of the aim more directly in view.

In pursuance of the object already designated, we prepared, and had printed at our own considerable cost, a set of queries in tabular form, with a view to getting from reliable sources an estimate (which we knew and stated must be conjectural) of the *average* acreable produce of *each election district in every county in the State*—in wheat, rye, corn, oats, buckwheat, barley, potatoes, turnips, peas, tobacco and hay; also, with a view to the dairy husbandry of the state, the probable or estimated average quantity per day, per cow, of milk; and the average estimated number of months that each cow was at the pail. To these queries we added others to ascertain the cost of labor—male and female—by the month and by the year, where board and clothes, or board without clothes, was found by the employer.*

At first view the reader may say, Sir, you covered a great deal of ground!—but on reflection, he must admit that we could not cover less, consistently with any thing deserving to be called an attempt to come at the actual condition and progress of Agriculture in the state. On the contrary, the better informed and more curious and exacting political inquirer will at once perceive, and perhaps be surprised, that we did not extend the inquiry to many other objects of industry and sources of income. We must warn all such, that the omission to do so was not from ignorance or under-estimate of their pertinency and importance, but we knew something of the community with whom we had to deal—we knew how difficult it is to worm any thing out of men, too many of them like ourselves, uneducated with any *reference to the business of their lives*, and therefore not in regular habits of intellectual exercise as to the sources and circumstances on which their professional prosperity hinges. It was in consideration of this constitutional apathy and indisposition to undergo the *labor of thinking*, much more of putting their thoughts on paper, that we so framed our inquiries, that those to whom they would be sub-

* Where slave labor is hired, the usage is almost universal, that the hirer finds the hired laborer in board and clothes; far better than is enjoyed by the white labor generally, of the countries that compete with us in the "great grain markets of the world;" countries with which we are invited to enter upon "free trade." Where free labor is hired the employer usually finds board and lodging only—not clothes.

mitted (taking care to select persons most likely to sympathise in our feelings and object) had nothing under heaven to do, but barely to take their grey-goose quill, and with figures *fill the blanks* already ruled to their hand! a work that might have been done in fifteen minutes as well as in seven years—for, as we before said, all that we asked, as was distinctly explained, all in fact that could be expected, was a "conjectural estimate," by sound-judging men. Getting their estimates from each election district in each county, and adding up the estimate of each, and dividing the aggregate by the number of estimaters, we expected to approach, as nearly as possible, the average product of the county, as before said, in each of the great staples enumerated. How else—can any one tell us—could the thing be attempted in a manner more promising of success, unless it were by actual measurement?—a thing impracticable, and not to be hoped for. Well, suppose in the 20 counties there are say an average of 8 districts;* that would make 160; and of these, how many, reader, *do you suppose took the trouble merely to fill the blanks, and send back the answer, without one cent of expense or trouble in any other way, and all about their own vital concerns?* Why, as you will see, about *thirty persons* in all, and from two-thirds only of the counties.

Now we do not mention it in the way of complaint, or in any sense of personal grievance, but to show how general, how deep-seated, how enlightened, and how auspicious of general "advancement" is the interest felt by Maryland Farmers and Planters, and the great labor of mind and body they are willing to encounter, to come at the real and comparative condition of the agriculture of their own state! Whether in fact, notwithstanding the fitful displays of zeal, once a year, the state is really taking some "steps backward," or forward? We say comparative condition, because, in the tables we had printed, next to the column of estimated measures and weights, was one for *estimate of "per cent. increase or decrease for the last* 20 *years;"*† so that the person interrogated would only have to hazard a conjecture, and with his pen fill up the column with what he might suppose to be the fact. Yes, there were several counties, and among them Anne Arundel, in which the state government, an endowed College, the Naval School, the Treasury of the state, the Chancery Court and Court of Appeals, all are located, and from which not one of the prominent farmers selected for their intelligence and *supposed* public spirit, replied *in any form!* So true is it, you may "call spirits from the vasty deep, but will they come when you call?" Perhaps they thought it impertinent in an individual not then living in the state. From Calvert County, too, no answer was received, but that excited little surprise. There are people willing and glad to make some progress, however slow, in the march of intellectual accumulations, by the most persevering and hard knocks at the door of the Temple; while on others, heaven seems to open the flood gates and to inundate them with knowledge. Wisdom seems to come to them without being sought. They can solve, intuitively, the most difficult problems in agricultural and legislative science. Such men seem to disdain all idea of express education for, and laborious inquiry into, the true sources of success. As reading and writing came to Dogbery in the play, so knowledge comes to them by nature; and of all sorts of it, "book knowledge" is sneered at as of no prac-

* We wrote to the seal of government, and was answered that there was no document there to show the number of districts in the several counties!

† The answers to that are not inserted, for reasons that will be given when we give the answers.

tical value. To this happy category of whole communities intuitively wise, belong—certain people.

From Queen Anne's, too, we got no return; from Kent none; Dorset none; Caroline none. Perhaps, however, bless them, they thought they smelt some political design!—that they could discover the end of a cat's tail sticking up through the meal! Well, whatever may have been the reason, such was the result. But it may go some way in the way of redemption to add, that we took the pains (their legislatures being at the same time in session) to send the same letter and the same tables to *every member of the Pennsylvania and Virginia Legislatures*, and received answers from *only two, and they in Virginia!* We mention this again to show how keen-sighted, how quick "to snuff oppression in the tainted breeze," how indomitable we may expect the *agriculturists* of the United States to be in any conflict which may arise between their own and any other class! Alas! to speak the melancholy truth, it all shows what we have so often said, and said in vain, that you must *bud the tree while yet in the nursery*—you must have your children instructed in some fondness for, in some knowledge of, the principles that *belong to their own profession!* Instead of Ovid's Art of Love, and the Wars of Jugartha, you must have them at school taught the *principles* of making ploughs, and threshing machines, and wagons, and carts, and gates, and roads and bridges, the nutritious value of grains and grasses, the true form and anatomy of domestic animals, &c.

Ah, but says the reader, you did not apply to the right sort of men! Now, as we profess to have some judgment in such matters, if in any, and choose not silently to have it impeached, let us state the precautions taken on that point. The reader must not lose his patience, for we are relating facts that ought not be lost upon other states, any more than on Maryland—facts that may show nearly as well as the fat and pampered things, the monstrous bullocks and monstrous turnips and potatoes brought to cattle shows, what may safely be predicated as to the *state of public feeling in connexion with agriculture*. Let us then state the precautions taken to insure attention to this, at least, well-meant attempt to come at the true and comparative condition of Maryland Husbandry, and without reliable knowledge of which, none but the vain and the ignorant will undertake to pronounce whether agriculture is stationary, or whether it is moving like a tortoise, a hare, or a crab.

The Agricultural Society of the state was in session at Baltimore when this expedient was devised. Gentlemen deservedly distinguished from the various counties were in attendance, and all in fine humor and spirits, in the well-founded anticipation, as the sequel has proved, of a grand and most creditable display of cattle and sheep, bulls and cows, hogs and heifers, at the next Fair. To these gentlemen, individually, our project was submitted, and they were asked for and furnished the names of some one in each election district of their counties respectively, whose zeal might be so far relied on as to expect that he would *barely fill up the blanks*, with such "remarks" as his kindness might or might not lead him to add. In many cases, these gentlemen were prevailed on to *promise* to act for their own district. The tables were accordingly printed, and sent to at least one person in every election district in the state, accompanied by the following letter:

Washington, D. C., ———, 1850.

Dear Sir,—

This application is made to you, respectfully, in the persuasion that the interest you are known to take in all that concerns agriculture, will prompt you to fill up the blanks and return it to me, under cover to your Representative at Washington.

I am aware that your estimate must necessarily be a conjectural one; but I know as well, that it will be impartial and candid. From it and others, from all parts of the state, a general one may be formed, as reliable as can be had, except by public means and authority—of the average acreable products, &c., of the state.

I need hardly assure you, that the general results to be thus obtained, are intended only for better information as to the real condition of your agriculture. Please mail your answer within a week, and let it be addressed to

Yours very respectfully,

"J. S. SKINNER,
Editor of 'the Plough, the Loom, and the Anvil,' now at Washington."

To the Hon. D. W. Naill, Senate of Maryland.

Now, will any one professing to entertain confidence in the existence throughout Maryland of an enlightened and zealous spirit of improvement, say that he could believe that not *one-fifth* of the persons thus selected and addressed would take the trouble to fill up the blanks, refold the letter, and mail it as requested, without being called on to do any thing more, or to expend one cent? Yet so it was, such is the desire to arrive at, and to impart, a knowledge of *the actual results of capital and labor applied to their own pursuit.* Without which knowledge, how or where will you begin to *improve?*

Well, now for the results, such as they are; and be it remembered, that we have had state societies and premiums distributed, and addresses delivered, in several counties in the state, for now more than thirty years. We, too, in our zeal and short-sightedness, used to augur every thing that heart could wish from the number of intelligent gentlemen who came, as now, once a year, from all the counties and neighboring states to the metropolis of Maryland, to interchange congratulations on the ardent zeal of the friends of the Plough, and to see the sleek prancing stallions, (sometimes more than twenty on the ground,) the great bullocks and the roaring bulls, and cows with teeming udders. Yes, we too thought and said that a spirit was abroad, under the effect of which, in thirty years, we should have at least an average of 25 bushels of wheat, 50 of corn, 50 of oats, 1200 of tobacco, and 3 tons of hay, 300 of potatoes, and 500 of turnips. It never occurred to us then that there was something else wanting besides a *knowledge of the how!* We now find that we only *looked at the surface*—our view of the case was scarcely skin-deep. We did not feel the pulse, to see the action at the heart. We saw the patient eating heartily, even with a morbid appetite, and concluded he must grow fat. We did not ask him to put out his tongue, that we might judge of his digestion. We saw a glow upon his cheek, and the fire of uncalculating expectation animating his countenance. We saw the tree adorned with the flowers of hope, but it did not then occur to us that there was yet a worm gnawing at the root, that might prevent increase of the fruit. In a word, and without a metaphor, it had not then been clear to us, as "*the Past, the Present and the Future*" has made it, that neither agriculture, nor any other art or industry, can make sure and steady progress, but when it enjoys the *presence and benefit of prosperous consumers engaged in diversified industry,* and living under a conservative policy, that *concentrates instead of scattering population.* But it is time to present our

TABLE OF THE PRODUCTS OF MARYLAND.

District.	Counties.	Wheat.	Corn.	Rye.	Oats.	Buckwheat.	Barley.	Potatoes.	Turnips.	Peas.	Tobacco.	Hay.	Milk per cow, per day, in quarts.	Average months per year at the pail.	Wages per month and board.		Wages per year and board.		Authority.
		Estimated average per Acre in Bushels.									Pounds per acre.				Men.	Women.	Men.	Women.	
1	Alleghany,	8	29	13	20	30		70	200			1500	2	8	9	2	100	38	D. Blacher
2		15	30	15	30	20		200	100			1500	12	5	10	3	96	36	George Matthews
3		10	20	12	25	12	27	100	200	40		2000	16		12		120	50	Daniel Plucker
	Average,	11	26	13	25	20	27	123	166	40		1666	10	6	10	2	98	41	
3	Baltimore.	12	35	15	20	17		100	150			2500	4	6	9	4	100	45	W. Fell Johnson
11		15	40	2	40			200	300			1300					105	66	Judson M. Ducket
	Average,	13	37	8	30	17		150	225			1900	4	6	9	4	102	55	
1	Carroll,	14	40	10	30			75	100			3000	2	10	9	4	100	45	Augustus Shriver
4	Charles,	8	25	10	12			100	150		1000	2500	4				60	25	John Hamilton
4		6	18	4	7	12		80	400	12	900	2000							Theodore Mudd
	Average,	7	21	7	9	12		90	275	12	950	2250	4				60	25	
7	Cecil,	15	40																Joseph Loudon
1		8	25		20			100				3000			10	4	90	40	G. M. Eldridge
	Average,	11	32		20			100				3000			10	4	90	40	
2	Frederick,	15	35	9	40	40	20	125	200		700	4000	5	11					Gedeon Bantz
4		9	30	7	20	22	10	70	105						10	3	110	33	William Todd
5		7	20	5	25	15	15	150				2000			10	3	100	30	P. Graybill

6	Frederick.	12	35	10	30	10		200				2800	2	9	8		100	40	D. W. Naill
6		16	32	10	30	30		50	100			3000			8	2	90	35	Wilson Hays
7		10	25	5	20	10		200	200		700	3000	4	10	8	3	80	30	L. T. Windsor
12		15	35	6	16			75				4000	16	9	9	2	100	30	John Shindler
14		15	40	8	22			50				3000	12	9	8	3	100	30	Sebastian Remsberg
	Average,	12	31	7	25	21	16	100	151		700	2828	7	9	8	2	97	32	
1	Hartford,	15	30		20	20		150	200			3000	6	6	6	10			John Carroll Walsh
2	Montgomery,	9	15	6	10	15		200	150	20	800	4000	4	9	7	2	60	24	Joshua Purdum
7	Prince George,	8	40	10	20	20		100	300	20	800	3000	6		7	3	60	30	W. W. W. Bowie
2		8	15	12	20	15		100	500	15	800	1500	8	7	8	3	75	36	Hanson Penn
	Average,	8	27	11	20	17		100	400	17	800	2250	7	7	7	3	67	33	
6	Somerset,	8	20	10	12			100	200	12		1000	3	9	8	4	80	45	Theodore T. Gibbons
2	St. Mary's,	10	20		15			100	300		1200	4000	4	9	7	3	60	20	Col. C. Combs
4		10	20		10			150	200	20	500	3000	4	10	5	2	60	30	R. H. Thomas
	Average,	10	20		12			125	250	20	850	3500	4	9	6	2	60	25	
1	Talbot,	11	28		16			60				3000	3	8	7	3	60	25	T. R. Holliday
4	Washington,	18	40	15	15	20						4000			10	4	96	36	William Dodge
5		15	30	12	30	20		75	75			3000	12		8	3	100	40	J. D. Hart
7		17	40	15	35			100				3000	8	9	10	3	110	35	John Newcomer
	Average,	16	36	14	26	20		87	75			3333	10	9	9	3	102	37	
3	Worcester,	8	20	10	15			50	200				2	8	8	2	80	24	Peter Whaley
1		8	12		16			150	200						7	1	40	20	T. S. Stephenson
	Average,	8	16	10	15			75	200				2	9	7	1	60	22	

Having now submitted, as far as the opinions of candid, well-judging practical Farmers go, after tendering them our thanks for assisting to illustrate the real condition of Agriculture in their state, we must leave the reader, for the present, to make his own reflections. We may recur to the subject in our next, if by so doing we can hope to render service to the cause. The first inquiry with every one, supposing these statements to approach accuracy, should be—*will this pay?* In other words, after charging interest on all the capital invested, and the labor employed—the perishable nature of most of that capital in the form it is used, as animate and inanimate machinery—and taking into the account whether the fixed capital is improving or deteriorating; taking all these things into the account, the great question is—supposing a profit and loss account to be struck, such as a merchant makes out at the end of the year—such as every prudent and sensible man should make out—on what side, *debit* or *credit*, would the balance fall?

It would hardly be proper to close these remarks, even for the time, without advising the public, and we are glad to do it, for the credit of the old state, that, where an opinion is given, except as to the rye crop, the answers are in nothing so uniform as in the statement of a *large average increase* in the principal grain crops, especially wheat and corn, from 10 up to 50 and 100 per cent. in twenty years. In St. Mary's, an increase of 50 per cent. in wheat and 25 in corn; in Charles, 100 in wheat and 50 in corn; in Talbot, 50 in wheat and 80 in corn. We merely give these as examples, to show the public impression as to the real advancement in Maryland Agriculture; and looking at the present crops, we can hardly help wondering that our predecessors did not all go by the board. Near thirty years ago we remember hearing the late Judge Houston of Kent express a doubt whether the eastern shore of Maryland averaged more than ten bushels of wheat. What does it average now?

How the Laborers of England profit by Cheap Food.—We take from a late English paper the following statement relative to the action of the system called "free trade," upon the laboring population of England, and we do so with a view to call the attention of our planters to an examination of the question, as to *how much cotton can be consumed by men who labor a whole week for a trifle more than two dollars*, and then pay almost two dollars for a bushel of wheat. The American laborer obtains almost a bushel in exchange for a day's labor, and therefore has much to expend for clothing, yet our cotton growers discard these men, preferring to employ English laborers, who give almost a week's labor in exchange for a bushel, and consequently have literally nothing to expend in clothing. How long *can* they persist in believing that the way to enlarge their market, is to employ people who can scarcely obtain even food, and whose shelter absorbs the little balance that may remain, instead of other people in our own country, who being well fed and well housed, feel it to be a matter of necessity to be well dressed, and are therefore in our own country good consumers to the planters of the world?

"That system is to charge a fixed price to the laborers of wheat and barley, so that as in 1846 and 1847, when wheat was dear, the laborers had their corn comparatively cheap; but now when the corn is cheap they have it comparatively dear. A very general practice is to pay laborers 9s. a week, and to charge them 8s. a bushel for their wheat, and as they consume on an average about two bushels a month, it follows, that by the payment of a price for wheat, higher than the market price, their wages are practically reduced to something between 7s. 9d. and 8s. And where this system of a fixed price for corn is not adopted, wages, in many instances, have been reduced in a corresponding ratio. I may, therefore, consider labor reduced 12½ per cent."

THE SUBSTITUTION OF MUTTON FOR PORK AND BEEF.

"Sheep have golden feet, and wherever the print of them appears, the soil is turned into gold."—SWEDISH PROVERB.

IN our last we had occasion to speak of an Agricultural Address delivered by General Robert Goodoe Harper, at a Maryland cattle show 26 years ago, as one among the best we had ever read. Its moral tone was elevated, its economy sound, and the practice recommended sagacious and unexceptionable. The truth is, that many of the best agricultural essays, such as might be followed with greatest certainty of realising the best results, have come from men engaged in other pursuits. It is high time that practical Farmers should ask themselves the question, why is it that we ourselves go, as if instinctively to other pursuits, for public addresses on the subject of our own business and affairs? We see that a member of the sitting convention in Maryland proposes a constitutional restriction on the *number of lawyers* to be admitted as law-givers!

One reason is, remote as it may seem, that people in the country, living by rural pursuits, too often, if they take any paper at all, go for the *cheapest they can find:* not reflecting that as with labor and other things, the nominally cheapest is generally in fact the most inefficient and the dearest. They content themselves with village *party* papers, for which they pay so little, and so *un*-punctually, when they pay at all, that men of talents cannot afford to conduct them, or when they do, are too often half-starved, unless they combine other business with it. How different with the papers in large towns! There a man of whatever trade or profession, merchant, lawyer, doctor, barber and blacksmith, has only to open his fresh half-dried paper, and there lies before him a full account of the prices of every thing, the progress of every enterprise, the discovery of every new process, the lights that lectures reflect upon every subject, the improvements developed in every art—in short, he has before him all that is going on in the world from day to day, to be read while he is taking his bowl of

coffee; but for all this he *is willing to pay and does pay* punctually a fair consideration, and if he does not, *the paper is stopped* on the instant, and this he understands. Hence it is that (without saying any thing about the neglect of *appropriate education*) Farmers go to other classes, to deliver lectures and addresses *on their own business.*

But to return to General Harper's address, not having room now for the extract, we refer the reader to that part of it which now we regard as replete with sound philosophy, about the *substitution of Mutton for Pork, in the diet of the country.* Our remembrance of it was revived by the recent suggestion of an enlightened friend, that it would be useful to bring the subject in a particular manner now again to public notice.

How it can be best promoted by any particular measures is not so easy to discover. If we had the power, we would have a good leg of mutton heralded and served up as the boar's head used to be, as the dish of honor at the head of all public dinners. The fact is, there is no folly too gross for individual or national prejudices to commit. There is a curious proof of this in the following incident, related by Col. Hughes in his very interesting "Memoir Descriptive of the March of the United States Army, under the Command of Brigadier General J. E. Wool, from San Antonia de Bevar, in Texas, to Saltillo, in Mexico," replete with valuable observation for all who are curious as to the features and resources of those regions:

At a distance of sixteen miles from Santa Rita, we found a pool of clear, fresh-looking water, that the advance-guard had passed, under the assurance of the Mexicans, who were with us, that it was brackish, nauseous, and poisonous, not fit even for the horses. We had received uniformly the same accounts of it from all quarters, but it looked so cool and tempting, and our thirsty animals showed such a positive desire to drink it, that I determined to try it, and to my surprise found it as pleasant to the taste as it was inviting to the eye. What had given rise to the notion of its bad qualities I could never ascertain; but that it was unfit for use, and poisonous to animals, was certainly entertained by the people of the country; and no Mexican could be induced to drink it, or permit his horse to use it, but preferred to ride fourteen miles further to the Rio Alamas without water.

Unfortunately our antipathy to mutton finds too much encouragement in the disrelish of American housewives for *any thing* sheepish.

But intending to "cut and come again" at the subject before us, we will only now submit a recent correspondence with one of the most enlightened land-holders of the country. Will you only, ye Farmers of the Green Mountain State, who make money by sheep, feeding them with good hay and oats, five months in the year, look here at a Farmer in the mountains of the Old Dominion, leaving a flock of wethers to graze through the whole winter, and selling them off fat in spring without giving hay or grass! Surely! surely! one-half the country don't know what the other half contains. Agricultural Societies ought to appoint travelling committees, with letters of honor, to visit various states, and thus interchange information by published reports. There are amateur travellers any how, who would be, or *ought to be*, very proud of such a commission, and who would thus disseminate widely a knowledge of the condition and advantages of the states respectively; but here is the correspondence:

New-York, 20th November, 1850.

My Dear Sir:—

A friend, to whose every wish I have every desire to pay prompt attention, has proposed to me to direct public attention, through the "Plough, the Loom and the Anvil," to the substitution of *sheep* for cattle husbandry, to a certain extent, in the persuasion that for health, as well as for economy, that change in the employment of agricultural labor and capital would be attended with useful results. It occurs to me, that when I was enjoying your hospitality at Walnut Grove, a few years since, you felt much inclined

to make the experiment, under the impression that sheep might be grazed and fatted profitably in lieu of cattle, and as (permit me to add) I know you do not belong to that long category of men who take deliberation out in *talking! talking! talking* forever, but that, on the contrary, execution follows close upon judgment; I write this to inquire whether, and to what extent, you have made the experiment, and what has been the result? The answer, which I am sure your kindness and public spirit will prompt you to make promptly, will of course embrace, without any further designation from me, such facts and suggestions as may seem to you to be useful to one desiring to form an opinion based upon the fullest view of the case. As for instance, among others:

The supply of sheep, as to cost and locality; the breed and weight of sheep, when bought, and when sold; how long and in what manner kept; where sold and where delivered; time and mode of transportation to market; average weight of fleece, and price obtained for wool, and where; whether washed or in the dirt; whether it is deemed best under your circumstances to raise or to buy, and for what reason; and whether the stock sheep might not be materially improved by an infusion of Bakewell (Dishley), or Southdown, or New Oxford Cotswold, or other blood; management of your flocks; whether all together, or divided, and in what number; attention required; whether there be, or not, great danger of destruction by dogs; can contracts be made ahead for sheep deliverable, and how does weight affect price, and in ——. But I need not be more particular, as you will at once apprehend all that the general inquiry involves. I feel the more anxious, as it seems to me that here is a scope for some new and profitable direction to labor and capital; and I have no appreciation for old stories and subjects, with which writers and practical Farmers have made the public familiar for the last half century at least. Your friend, J. S. Skinner.

Walnut Grove, Munroe County, Va., November 30, 1850.

John S. Skinner, Esq.,

Dear Sir:—Your favor of the 20th inst. is to hand; and in reply, I am sorry that my time (being on the eve of departure for Europe) will not afford me the opportunity of answering, as fully as I would like, the various inquiries you propound in relation to sheep husbandry in this country. As you are aware, this part of Virginia, from its remoteness from market, has of necessity been from its first improvement a grazing country, and confined exclusively to the fatting of cattle and raising, for sale, a few horses. No attention, I may say, has been paid to sheep husbandry, any further than the immediate wants of the country. I have for several years entertained the opinion that sheep husbandry could be made much more profitable in this country than cattle; and from a small experiment made last year, I am convinced of the fact so fully, that I am this year turning my attention exclusively to the sheep.

Last year I purchased some two hundred picked wethers, (common stock,) in the county of Taswell, (south-west of this about eighty miles,) delivered on my farm the 1st of October, at a cost of $1,25 per head. I wintered them exclusively on grass, not finding it necessary at any time to give them dry food. When sheared, the 10th of May, they were good mutton; and when sold, the 15th of June, they were very fat, weighing about 80 lbs. on the average. They sheared, per head, 6 lbs. of wool in the dirt, for which I obtained, as it was in the city of Richmond, 30 cts. per lb. The sheep I sold on the farm at $2,70 per head, which you will perceive gives the following result:

Sale of sheep,		$2 70
" 6 lbs. wool,		1 80
		$4 50
Deduct cost of sheep,	$1 25	
Transportation on wool, 1½ cts. per lb.	9——	1 34
Profit,		$3 16

Now I calculate that five sheep can be well kept and fatted on the same food and grass that is required to support and fatten one bullock. We are satisfied with an advance of ten dollars per head on the cost of the bullock—say $18. Hence you will perceive the difference in favor of the sheep will be as follows:

Profit on 5 sheep,	$3 16	$15 80
Interest on difference in cost,		58
		$16 38
Deduct profit on 1 bullock,		10 00
		$6 38

There is more risk on sheep than cattle. The only risk, however, on the description of sheep as above is from loss by dogs. Under any circumstances, with proper manage-

ment, I do not think the risk from dogs and disease combined would be more than equal to 10 per cent.

As long as 3, 4, or five year old wethers, of good quality, can be bought for $1,25 per head, I think it more profitable to buy than to raise. I have now on my farm some 1800 head, 1200 of them picked wethers, bought as above, and will be sold after they are sheared; the remainder 600 are stock sheep, and will be kept over. I keep and graze them in flocks of from one to three hundred, according to the extent of the field. They require no other care than that of being salted once a week, and occasionally looked after, to see they are not disturbed by dogs.

The stock of this country is greatly improved by a cross from either the Southdown or Bakewell. The Merino improves the quality of the wool, but diminishes the size, and weakens the constitution of the animal.

Sheep of the description I have purchased this year, may, to the extent of a few thousands, be bought in the spring or fall; if in the spring, after they are sheared. Stock sheep (by which I mean lambs, ewes, and wethers,) may be purchased at 75 cts. per head.

As we will soon have the rail-road extended to our country, and as it is beyond all question the best sheep region in America, and the lands cheap, you cannot do better than advise all your friends disposed to turn their attention to sheep husbandry, to give us a look, or, in other words, to examine our soil and climate.

Now, my dear sir, I must, for the want of time, draw to a close. With considerations for your health and happiness, I am most truly yours, OLIVER BEIRNE.

In subsequent numbers we shall enlarge on this subject, with descriptions of the breeds of sheep best adapted for mutton. The figure at the head of this hasty essay represents the *Southdown*, which, for mutton, we should recommend under many circumstances, and in many situations, to be crossed once with the Leicester, or Dishley, adhering then to the Southdown stock. But the views to be submitted will be so full, that every reader may judge at least for himself. In such demand was the Bakewell, or Dishley, in the days of the author or founder of the breed, that he is said to have let his buck "two pounder" for four hundred guineas for a single season.

P. S.—But an objection to the use of mutton, too well founded, arises from the almost universal practice in this country of eating it within a day or two of its being slaughtered. As with poultry, so with other meats, they should be eaten before they get dead cold, (and while yet they are tender,) or they should be kept for some time, until the fibre begins to give way, in the incipient stage of decay. In summer mutton should be kept in ice for a week, and in winter should not be cooked under two or three weeks. A saddle of Southdown thus kept is worthy of being offered as "a dainty dish to set before"—even the best mother and housewife; and what more *could* we say.

WHAT IS WORTHY OF BEING CALLED AGRICULTURAL "ADVANCEMENT."

Fifty years ago, the rental of the *Wold* district in England was about $2 25 per acre. It is now $6 25, and many thousands of acres have been improved from $2 50 to $50, up to $150 per acre, and large tracts have been improved, within a few years from $2 50 to $7 50 rental per year. The yield of England in grain fluctuates between sixteen and fifty-six bushels of wheat to the acre. The average is *said to* be thirty-two and probably is twenty-five bushels. With high management, seven or eight quarters; fifty-six bushels of barley, and from seventy to eighty of oats are frequently obtained. When Arthur Young made his survey at the close of the last century, the estimate was sixteen to twenty-four of wheat—thirty-two of barley—and forty of oats.

EXHIBITION OF AMERICAN WOOL AT THE WORLD'S EXHIBITION.

The slanders against the United States, propagated by the Count Buffon, that "all animals and vegetables are smaller in the New World, than in the old," was long since sufficiently refuted by Mr. Jefferson, in his notes on Virginia,* as far as relates to the natural productions of our forests; and just thirty years since, we, ourselves, published an ample array of facts, to confute the assertion, as to the size of our *domestic animals*. These facts proved conclusively to the world, that our grasses contain as much nourishment, and that our climate is as favorable as that of the Old World, for the rearing of stock, as food for man; and abundant testimony has been given to prove, that our climate is highly congenial also, to the full development of the *powers of the horse!* Where else in the world has that noble animal equalled the American goer, in that most useful gait, and form of action—*trotting in harness?* Where, except in the United States, has he trotted his *twenty* miles *within the hour?*

We will give a very few, out of a great number of cases, exhibited so long ago as before the existence of many of our readers, to show the size of *animals* of native growth. Should the reader desire more, we can give him hundreds to prove, that if *size* be the great object to be encouraged, societies should designate, as the least, the following weights, above which, the competitor should be required to reach; that is, if it be deemed at all wise to encourage the growth of monsters.

Jacob Hiltzheimer, sold a cow in the Philadelphia market, in 1817, that weighed of net beef 1225 pounds, offal, 395.

A 5 year old steer, fed by Lawrence Sickle, one summer and winter, weighed net 1494 pounds.

In 1802, an ox was exhibited in New-York, that weighed upwards of 3000 lbs. He was *twenty hands high*, and the length from the tip of his nose to the extremity of his tail, was 18 feet. He was raised in Beekmantown, Dutchess county, N. Y., by Theodore Van Wyck.

An ox full as large, was exhibited in Washington, D. C., March, 1804. He was but 6 years old, and weighed 3000 pounds. He was raised in Chester County, Pa.

Hogs.—In December, 1809, four hogs, raised in New Jersey, by Ellis Wright, of Burlington, were shown in Philadelphia, of the following weights and dimensions: 798, 770, 742, and 728; height of the largest, 3 feet 8 inches; length from the snout, to the root of the tail, 9 feet 6 inches; girth round the body, 8 feet 8 inches.

* This work we believe is out of print. There is a copy of it in the hands of General Smith, the accomplished president of the Baltimore and Maryland Library, with Mr. Jefferson's own last notes in M.S., and which ought to be placed before the public; and would be read with avidity, were it not that the public taste has been vitiated by spurious literature and pernicious excitement in various ways. This libel on the capabilities of the New World, and its developments in the vegetable and animal kingdoms, has been lately revived by a certain Robert Knox, M. D., Lecturer on Anatomy, &c., in what is called "A Fragment of truth on the races of Man," in which, there is not a fragment of truth, but much of English dogmatism and arrogance, in all that he says on this subject, and his coarse abuse of "Mr. Cooper the Novelist." In respect of what Mr. Cooper says in comparison of the Rhine and the Hudson this true son of John Bull, thus exclaims, "What solemn pedantry, what deplorable want of taste and sense, to forget the passage of the Rhine by Cæsar and Napoleon. These are the names which give immortality to the Rhine, &c." And pray you Doctor Knox, do you forget that a more illustrious man than Cæsar or Napoleon—that *Washington* crossed the Hudson?

Benjamin Hamlem, of Tiverton, Rhode Island, killed a hog in August 1810, that weighed, when dressed, 725 pounds.

We could give hundreds of instances, if need existed, to show that no stimulus is necessary to prove, that we can have all animals, not only as large as those of the same species in Europe, but quite as large as is consistent either with good taste, good eating, or sound economy as it affects the pallet or the "*pocket nerve.*"

But it was reserved for our friend Mr. P. A. Browne, of Philadelphia, to demonstrate a much more important problem, as respects a great source of national wealth, aye, we might say national *independence;* and that is, that our soil and climate are as well adapted as those of any part of the world, to the *production of fine wool!* We say reserved for him, for, as far as we know and believe, he stands alone, in having made the subject of pile, of every sort, and in all its bearings, an object of special study and thorough investigation. Of this our readers have had proof in the few, but very interesting results, which his kindness has already enabled us to present to them. The last number of the "Plough, Loom and the Anvil," gave in the article on raising hogs for their bristles, a very curious and valuable specimen, of what the public may expect in his forthcoming work, should not want of due encouragement unfortunately prevent or delay its publication. Every sheep breeder should unite with us in the hope, that such may not be the case, were it only for what it will contain on the subject of *wool* —one of the most important branches of husbandry to which this nation can now give its attention. And here we are glad to announce the following:

INVITATION TO ALL OWNERS OF FINE-WOOLED SHEEP.

All breeders of fine-wooled sheep, are respectfully invited to send samples of their finest fleeces to P. A. Browne, Esq., of Philadelphia, before the 1st day of February next.

Mr. B. proposes to exhibit, at the forthcoming great Fair in London, samples of wool from every State in the Union, that can supply such as shall come up to, or rise above the fineness of 1·1875th part of an inch.

This invitation to the breeders of *fine* wooled sheep, it was our intention to announce in the last number; and a paragraph was written for that purpose.

We trust no breeder, of patriotic ambition for the honor of his country, will neglect this invitation. Who would not sooner take the prize for wool of the finest fibre, than for even a Toledo or Damascus sword blade of the finest temper?

Mr. Browne has already, in his collection of hair and wool, from every species of the animal kingdom, specimens of wool from *five different States*, as fine as the finest, except a single one, that was brought from Saxony by Mr. Fleichman, and he has one specimen finer even than that.

We shall not stop here to descant on the great value of an investigation, which to some, may appear rather curious than profitable, only because they do not reflect, that Mr. Browne's critical examinations have already established for us, the capability of furnishing a great element of national wealth, in the production of which, England herself, has failed for want of suitable climate and food, notwithstanding all the legislative encouragement she could bestow.

Men and countries have deservedly gained enviable renown, for scientific investigations, much less practically useful than this of Mr. Browne; and Editors of papers who would circulate this invitation, would be doing a real public service.

ON THE MANUFACTURE OF SUGAR.

FROM THE LONDON AGRICULTURAL GAZETTE.

This journal spreads so widely and so equally, over the whole country, that to make it useful to all, a great variety of subjects must be attended to, in many of which the number who are locally interested, must after all be limited.

The sugar making region, (until lately extended into and beyond Texas,) was the most limited, but by no means the least important. The product is one of great interest to every country, and deserves especial protection. Let those therefore, whose capital is involved in it, manifest their sympathy for the protection of other industries. While of all our patrons, there are none perhaps who are so little concerned in the topics usually discussed in agricultural journals, as those of them who reside in our sugar districts of country, we have nevertheless, in Louisiana, probably, a greater number of subscribers to the "Plough, the Loom and the Anvil," than in all Maryland, Baltimore excepted. We sometimes apprehend that our Louisiana patronage is more the result of ancient and personal good will, than of any thing particularly interesting to them in the pages of our journal. Be that as it may, we feel bound when (as rarely happens) we do see any thing that may throw even the least light on their special pursuit, to give it a welcome place in our pages. Hence the following and other papers which will follow it, from one of the most accomplished men in Europe, Doctor Lindley.

The subject has moreover another and more extended attraction for us, since we are just notified by the reception of a diploma, of the election of the editor of the "Plough, the Loom and the Anvil," as a corresponding member of the "Royal Hawaiin Agricultural Society," accompanied with the following letter, by which it will be seen, that *Sugar* is one of the topics to which the attention of its corresponding members, is particularly invited.

We shall send them these essays on the art of obtaining sugar from the sugar-cane, as the best evidence of sensibility to the honor conferred on us.

ROYAL HAWAIIAN AGRICULTURAL SOCIETY.

"*Honolulu, Hawaiian Islands, September* 5, 1850.

This is to certify that John S. Skinner, Esq., *has been duly elected a corresponding member of the* "Royal Hawaiian Agricultural Society.

William L. Lee, *President.*

Edward Pearson Bond, *Cor. Secretary.*

R. H. Bowlin, *Rec. Secretary.*

"*John S. Skinner, Esq.*— "*Honolulu, Sept.* 5, 1850.

"Dear Sir: I have the honor to transmit to you herewith the certificate of your election as a corresponding member of the 'Royal Hawaiian Agricultural Society.'

"I will forward to you upon its publication a copy of the first number of the transactions of the society.

"From that you will learn that it is yet in its infancy. Its members believe it to be destined to accomplish much good.

"They have been led to hope from your well-known interest in the advancement of agricultural science, that you would take an interest in the success of their movement, and would give them the benefit of your large experience.

"They would thankfully receive any information upon the general subject of agricul-

ture, and upon that especially which is adapted to the wants of a tropical region, as the culture of sugar and coffee, now the staple products of these islands.

"With much respect yours,

"Edward Pearson Bond,

"*Cor. Sec. R. H. A. Society.*"

REVIEWS.

The Sugar Planter's Manual, being a Treatise on the Art of obtaining Sugar from the Sugar-Cane. By W. J. Evans, M. D., 8vo. pp. 244. London: 1847.

The Practical Sugar Planter; a complete Account of the Cultivation and Manufacture of the Sugar-Cane. By Leonard Wray. 8vo. pp. 415. London: 1848.

The Manufacture of Sugar in the Colonies and at Home, chemically considered. By John Scoffern, M. B., 8vo. pp. 160. London: 1849.

Copies of Report and Correspondence on the subject of Dr. John Scoffern's Patent for Refining Sugar, presented to Parliament, 14th August, 1850. Folio, pp. 18.

When several books are published nearly at the same time upon any art, it is generally evidence that considerable improvements and changes are being effected in it, or at all events that it is exciting a good deal of interest amongst those practically engaged in carrying it on. All this is certainly the case at the present time in respect to the manufacture of sugar, which for a long series of years had been conducted in the West Indies in the same unvarying and imperfect mode, but which, within the last dozen years, has attracted the very serious and earnest attention and study of those most interested in it—an effect partly produced by the gradual improvement of sugar manufacture in other countries, and partly caused by the very low and depressed state of West India produce generally.

In 1842, the Governor of Jamaica, the Earl of Elgin, anxious to promote the welfare of the country committed to his charge, offered a prize of £100 for the best essay on the cultivation of the Sugar-Cane. This produced eight essays on the subject, and Mr. Thomas Henney, whose essay received the prize, states in the commencement, "I am of opinion that the unprofitableness of most sugar estates, of which the proprietors justly complain, is in a great measure attributable to the imperfect manner in which the system of cultivation is carried into operation, and the too little attention paid to the all important subject of the economy of manure." These essays hardly go into the manufacture of sugar, their chief object being the cultivation of the cane, but Mr. Henney observes, that notwithstanding the imperfect condition of the manufacture, and the numerous attempts which have been made to improve it; yet that during the twenty-five years over which his experience extended no real improvement had been effected in the process.

Sugar is manufactured in different parts of the world, chiefly from four plants—the Sugar-Cane, Maple, Beet and Palm. The mode in which the process is carried on, of course varies a good deal, but there is at the same time also a considerable degree of similarity, inasmuch as in all cases the formation of saccharine matter in plants depends on the same physiological and chemical conditions, and the separation of the sugar from the impurities, or rather the other vegetable secretions with which it is associated, is in all cases attended with the same difficulties; dependant on the very nature of the sugar itself, and the peculiar qualities of the substances with which it is mixed in the juices of the plant. There are three points especially of interest and deserving attention in the manufacture of sugar, and at present we shall wholly confine our remarks to the sugar of the cane; these are, firstly, the formation of sugar in the plant, secondly its extraction, and thirdly its purification—including under this latter head not merely the manufacture of muscovado or raw sugar from the cane juice, but likewise its purification by the refiner, and the manufacture of white or loaf sugar.

The object of the sugar planter is, to obtain the largest possible quantity of saccharine juice, at the least possible cost, from a given number of cane plants. That this is not done may be learnt from a very slight consideration of the modes of culture employed, and the manner in which the various operations of the sugar farm are carried on. Mr. L. Wray even goes so far as to designate the whole system as an "entangled mass of mischievous practices, encouraged and supported by self-interest, old custom, and deeply rooted prejudices." It is unnecessary for us to say any thing, however, on the mere practical and mechanical arrangements of the sugar plantations, such as drainings, irrigation, use of ploughs, choice, care, and management of cattle, &c.; the consideration of these matters, though doubtless all important, as regards the profits of the sugar manufacture, and the interests of the holders of West India estates, would lead us too far from the main question now before us. In planting Sugar-Canes, as in most similar agricultural operations, the first thing is to break up, cleanse, and pulverise the soil. Rows of holes, two feet distant from each other, and three or more feet apart, are then dug about ten inches deep; one or two cuttings or joints of Sugar-Cane are placed at the bottom

of each hole, and then covered with about an inch of mould; the hole not being filled up again to the surface, so as to leave the cutting covered with soil, at the bottom of a small cup-shaped cavity or basin. Shoots are put forth in about a fortnight, and the earth is gradually filled into the hole, as the young plants grow. During the formation of the canes, the earth is from time to time loosened and weeded, and when the canes are judged to be ripe, or to contain the greatest quantity of saccharine matter, they are cut and carried to the mill. From the roots and stools of the canes, which remain in the soil, a number of suckers soon spring up, which are termed rattoons; these are not so large as the first crop of canes, and diminish in size and value each succeeding year. By properly manuring the plants, and constantly loosening the soil about their roots, a good crop of rattoons may be had from the same plants for a number of successive years; but as they always gradually deteriorate, it is the custom to plant with fresh cane joints, every year in rotation, that part of the farm which has been longest yielding rattoons.

The quantity of sugar formed by the canes or rattoons varies not only with the kind of cane, the nature of the soil, the climate, and the greater or less degree of care bestowed on its cultivation, but likewise on many other minor circumstances; the average proportion is stated to be nearly 18 per cent., and the quantity of juice contained in the cane is about 90 per cent. Practically, however a very much smaller quantity is obtained, because, from the imperfect machinery employed, and the incomplete manner in which the cane is pressed, no more than 50 or 60 per cent. of juice is usually procured; frequently, indeed, it is as low as 36. In the better mills they obtained from 70 to 75 per cent.

The sugar farmer has, in fact, two opposite objects in view in the cultivation of the cane; he wants his plants to grow fast and luxuriantly, and at the same time he wants to prevent them from vegetating *too* rapidly. If the canes grow quickly and rankly, a good deal of the sugar formed will be consumed, serving as food for the plant itself; and, besides, the rank luxuriance of the leaves, by forming a thick mass of vegetation, checks the access of air and light, and consequently prevents the canes from ripening. Accordingly, as soon as the plants are beginning to grow too rapidly, they are *trashed*, a certain number of leave being stripped off; this checks their growth, and, if properly done and judiciously timed, effects the object in view; but if, as is often the case, it is ignorantly and indiscriminately done, more harm than good must result. In many cases the canes are planted too thickly, they grow up weak and thin, and as a remedy, they are "heavily trashed;" thus they are deprived of the very organs designed for the elaboration of organic matter at a period when those organs are especially necessary.

Very great uncertainty appears to exist as to the best time for cutting the canes, and the period required for their ripening. The planting season varies a great deal in different places, depending in many cases on the setting in of the rainy season; but where artificial irrigation is possible, the canes may be planted at all periods of the year. A good and complete series of experiments on this subject, well designed and carefully executed, would be of very great value. It is certain, however, that the different varieties of the cane, cultivated on different soils, and exposed to dissimilar seasons, will require very various times to ripen, and that the cutting time must be made to depend entirely on these different circumstances.

A healthy plant, growing freely, and supplied with abundance of food, elaborates organic matter from the gaseous substances existing in the surrounding air; it forms leaves and woody matter; but besides these it has another and a very important function to perform—provision must be made for the next year's plants. In the case of annuals this is done by the formation of seed; growing points or embryos are generated, surrounded with a small but sufficient store of suitable organic food, and enclosed in a shell or husk. In trees or plants which live more than one year, there is besides this, yet another mode in which the life of the plant is carried on. At the close of the growing season buds are formed; these closely resemble seeds; they are growing points, properly protected, and supplied with a suitable store of organic food. The substance usually formed for this purpose by plants is starch, but in some cases sugar is deposited instead of starch; of this we have an excellent example in the sugar cane. Sugar, then, is formed in the cane during its season of growth, and deposited in the stem as a store of food for the future buds. During the first few weeks of the season no sugar can be deposited, because it is all employed by the plant in the formation and development of new leaves and stem; but as soon as the first vigor of vegetation is moderated, though the formation of sugar still continues, it ceases to be so employed, and is then deposited in the cells of the stem, in those parts where it will be most serviceable to the buds and other points of future growth. It is evident from even a slight consideration of the economy of vegetation, that the store of sweet matter thus collected and preserved in the cells of the sugar cane must differ very materially from the thin, watery sap from which it is elaborated; one very important distinction depends on the larger quantity of azotised matter which the latter contains. It necessarily follows that, in cutting the cane

when it is perfectly ripe, a large proportion of saccharine juice will be obtained, in proportion to the quantity of mere cane sap, than at any previous period of growth; and it is highly desirable, for several reasons, to procure the sweet juice as pure as possible. Dr. Evans very justly remarks on this point: "How essential is it, therefore, to attend to these circumstances, and rather suit the crop time to the cane, than, as is too frequently the case at present, suit the cane to the crop time." The loss occasioned by cutting unripe canes is not merely that of the sugar which would have been formed, if they had been left to ripen, but also that a quantity of foreign matter is introduced with the crude sap, which renders the subsequent purification of the sugar more difficult, and occasions, as we shall presently show, an absolute loss in the sugar already formed by the plant.

In crushing the sugar canes in the mill, there is, however, always another object in view besides the mere extraction of the juice, namely: the preservation of the megass (as the fibrous woody residue is termed), which is dried, and then constitutes the chief fuel employed in the subsequent evaporation of the juice. In consequence of this, the sugar-maker is anxious not to crush the canes too thoroughly, as the value of the fuel would be thus injured, and he is rather content to lose nearly half the sugar for the sake of the combustible residue. It is hardly necessary for us to make any observation on this part of the process; it speaks for itself: but we may remark that the sugar thus sacrificed contributes very little to the value of the fuel; because, from the large quantity of moisture left in the megass, it is dried slowly and with difficulty, and generally undergoes more or less putrification or decay.

ELEMENTS OF AGRICULTURE.

This little work of which we have often spoken, as exactly fitted for the hands and head of every farmer's son in the land, lately fell under the notice of the Hon. Henry A. Wise; a member of the Virginia Convention, and a gentleman who studies with *heart* and head, how to promote the welfare of society. Like all such men, he perceives, that on nothing does it so much depend as on *early and suitable* education. He believes that every parent and every guardian should "train up a child in the way he should go."

In regard to this work, which may be had for a few cents, Mr. Wise says:

"'The Elements' is more than an agricultural Primer. I got from it, more than from any other agricultural work (always excepting Von Thaer's Principles of Agriculture) I ever read. It is the very best that has been offered for the use of schools, and ought to be placed in the hands of every boy in the country. I was so impressed with its great value as a school-book for farmers' sons, that I at once requested one of our country merchants, to procure on my account for distribution, several dozen copies from Carey & Hart."

R. T. W. Allston, Esq, of South Carolina, had no sooner read it, than he procured fifty copies in like manner, for gratuitous distribution, and Major J. E. Jones of Delaware, a yet greater number. Yet even such a work not costing more than twenty or twenty-five cents, prepared by learned minds, and containing genuine unmixed seeds of precious knowledge, remains a drug on the shelves of the bookseller, and that too while we talk complacently of "agricultural advancement."

Productiveness of the Peruvian Barley.—I dibbled this year one peek in an acre of ground; the produce has been 22 bushels, the weight per bushel is 64 lbs.—the bread made from it is superior to that of common barley bread, and not darker than some of the red wheat would yield, after the bran has been removed. In flavor and appearance it might be mistaken for dark wheaten bread. Do you think that if the Peruvian barley had been sown thicker, or broadcast, it would have produced a larger crop? Twenty-two bushels an acre is a small produce, although it may appear a tolerable yield, from the small quantity of seed sown. The seed was dibbled about six inches apart, two or three grains in a hole. The land in which it was sown was tolerably strong land, immediately adjoining the Peruvian barley; in the same field I sowed less than a bushel of black barley; it produced at the rate of 60 bushels per acre, but the bread made from it is very dark.—*X. Y.*

WHAT CAN BE DONE IN FAIRFAX.

We were presented yesterday by Mr. John P. Poss with some specimens of the products of his farm, in Fairfax county, about three miles from town—turnips, potatoes, beets, and carrots. He raised this year two hundred and fifty bushels of turnips from a quarter of an acre of ground. They are remarkably large and fine, as are also the potatoes, beets, and carrots, and show what the land in the neighborhood of this town is capable of producing with good management. Mr. Poss used only the ordinary manure, without any guano, or things of that kind. The articles to which we refer are deserving of notice, as some of the best "fruits of the earth," we ever saw.—*Alexandria Gazette.*

Yes, truly! who needs to be told, what the lands of Fairfax, and the other equally sparsely settled counties of Virginia, can be made to produce? Instances of their capability have been given and known, for more than fifty years, and if they had not, the Hon. Mr. Newton has lately proved and proclaimed their capacity. We all know that the very deserts of Sahara themselves, like the blowing sands of Norfolk, England, and of our own Worcester county, can be made to yield more than twenty tons of turnips to the acre: but to what end continue to prove, here and there, under the influence of glittering silver cups, what lands can do, and have done, as has been a thousand times demonstrated, while ignorance or fanaticism are sure to step in, with that sweet-sounding euphonious song of "free trade," with all the world—a song which in some States, partizans teach their people, before they get clear of the egg-shell, as the hen teaches her chickens to come when she finds a grain of barley? "Let us, say they, disregard what our lands can be made to do, if our customers were close at hand, and go to the world's end in search of the market, where we can sell now dearest and buy cheapest" —the very system that will forever scatter our people, separating the consumer from the producer, and keep our lands, like these capable lands in Fairfax, forever unsettled.

Here are 1000 bushels to the acre, produced within three miles of Alexandria, equal to most of the great prize crops in England, and worth even at 25 cents a bushel, $250 worth of manure, to be spread upon ten acres of land at 25 loads to the acre, costing $1 per load. Such would be to the landholder the advantage of having customers at hand, even if he *did* give a little more for his home-made iron, than he can get it for *now* in the "cheapest market." But the sole question is, who are to buy Mr. Poss's fine large turnips, and beets, and potatoes, and carrots? That's doubtless what he "would very much like to know." His sole customers are the good people of Alexandria, who have increased between 1810 to 1840, a period of 30 years, from 7,227 to 8,459. Now one hundred acres of land out of the 288,000 in Fairfax, under Mr. Poss' management, in turnips, beets, potatoes, and parsnips, would surfeit the market for a year.

The good farmers of Fairfax, are about as well off at the plough, as a hatter or shoemaker would be in a town where all were employed in making hats or shoes. Every now and then we hear what prodigious crops they *can* produce, but their good friends, the "free traders," never tell them how they are to *get a market* for what they can make.* Here

* We, who devote our days and nights in attempts to teach them, not how to make turnips, (for that they very well know,) but how to create and spread over the whole land, an *inducement* to task its capacity; we have in the whole county, perhaps, 6 or 8 readers of this Journal. We had three in Alexandria: one large and opulent manu-

we see that the lands of Fairfax could supply beef and mutton, potatoes and turnips, milk and butter, for the tens of thousands who *ought* to be employed at the Big and Little Falls of Potomac, and in Georgetown and Alexandria, in manufacturing the wool and iron, and timber, and using up the coal, and quarrying, and heaving the stone, and burning the lime, and digging the marl that abounds all along from Cumberland to Mount Vernon. But in steps the free trader, and says, "Oh, no! Let us send to mother England for the railroad iron, to be laid down within the corporate limits of Alexandria; and for the cloth to be worn by the men who are to work upon the road. Let us never think of the flour we should supply, and the beef and mutton we could make, with Mr. Poss' turnips, and potatoes, and beets, and carrots; and the milk and butter that would be demanded by the people employed in making this iron, and this cloth, with our own coal, and ore, and wool; if made in our own country;" as it all might be made here on the spot, where a kind providence has so kindly supplied all the elements and materials.

How blessed of God is this little old town of Alexandria; but, alas! how cursed by the short-sighted policy of rulers!

"God has made man upright, but they have found out many inventions."

Allow one half of the 40,000 people in Washington and Georgetown to be supplied by the neighboring counties in Maryland, saying nothing of what comes down from above the canal; and suppose the supplies of the remaining 20,000 to be monopolized by Fairfax, and there would be 14 acres for the supply of every man, woman, and child; and here we have one acre producing 1000 bushels of turnips! and yet, we hear, once in a while, that swarms of Yankees are settling in Fairfax, and enriching large bodies of lands and themselves, in the absence of customers to buy even the little that poor lands will produce! verily, "when the sky falls, we shall catch larks." No! no! Let us determine that we will use up our own materials in the production of these things, and millions of men will come from all quarters of the world, assured of adequate return to labor. To these Mr. Poss can sell his turnips, and his potatoes, and his beets, and his carrots. It is with such men, so laboring and so paid, that there will be some benefit in maintaining free trade; and by competition, as has ever happened, we should in a few years get all these manufactures, better and cheaper than they will be supplied by Mother England, in her great work-shop, when she shall have succeeded by the sacrifice of a few millions of the capital of monopolists working with cheap labor, in breaking down and destroying the few remaining manufactories, as we see by the following, she is prostrating, one after another, all the manufactories of the country:

Iron Works Stopped.—The Allentown Iron Works, in Lehigh county, Pennsylvania, were closed on the 5th of November, and all the workmen discharged. These furnaces have made as much as ten thousand tons of iron in one year; and in that time consumed 20,000 tons of anthracite coal, 25,000 tons of iron ore, and 12,000 tons of limestone. They were constructed with all the new improvements, and were very advantageously situated on the Lehigh river. The quality of the iron was so decidedly superior, that it always obtained the highest prices.

Thus, one by one, our manufactories are closed. The above exhibits at a glance the

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facturer, who went the length of taking one paper. Whether he does now or not, we are not sure. We believe his manufactory has ceased work, and if so, its operatives have gone, of course, to be, for Mr. Poss and his neighbor, rival makers, instead of being willing buyers of their turnips. We attended a large exhibition of most respectable farmers, at Fairfax Court-house, and out of several hundreds, *two* agreed to patronize the "Plough, the Loom and the Anvil," and they were *thriving Yankees*.

condition of the iron trade in Pennsylvania. It needs no comment. It shows at once the immediate necessity of better protection in this department of our business interests. —*Pottsville Miners' Journal.*

And here another:

We learn from the "Lowell Courier," that within the past year there have been discharged from the various manufacturing establishments in that city, 2,378 hands. Looms have been stopped to the number of 2,272, and monthly payments to operatives have decreased $33,404.56. In addition to this the Machine Shop Company have discharged, since 1848, 286 men, whose monthly pay was $1 per day, and would amount to $6,864 —giving a total falling off in the monthly payments of the several companies of $40,268.56.

"THE FARMERS OF THE UNITED STATES MUST PREPARE TO CONTEND AGAINST THE WORLD, FOR THE MARKETS OF THE WORLD."—Governor Wright, of New-York.

Mr. Jacobs, in his official Report to the British Parliament, says, that in Russia the rent of 8,000,000 of acres, belonging to the crown, is less than 3 pence per acre, without any taxes. The land actually in cultivation may be set at from 8 to 14 pence per acre.

In the Provinces of Padolia and Volhynia, (Russia,) which are very fertile, the corn is trodden out by oxen, and when cleaned, is preserved in caves, and there left until it is destroyed by corn worms, if no market offer. How *low* would such Farmers sell their grain, sooner than leave it to be devoured by *corn worms?* The *price* there of a *serf white man,* to sell him, as is usual, with the land, is $600. Laborers are hired for $27,50 a year, and *find themselves.* It costs three half-pence per day to keep a *white* slave or serf. Mr. Jacobs states that when the price of wheat was *as high* as seven dollars and upwards for 8 bushels, of 70 pounds to the bushel, its cultivation was always on the increase. A glorious chance for American Farmers in the "great grain market." But who knows what we may do, even against such competitors, (including the grain worms,) when we can hire a man for 3 *cents a day, and he find himself!!*

At page 47, Mr. Jacobs says:

"Implements are of the lowest description, and the cattle are attached by ropes—no leather is used; ploughs ill-constructed, little iron about them; harrows, teeth and all, are of wood. In sowing, the seed is carried in an apron, or tail of the frock, by the man who scatters the seed on the ground."

Has the reader never seen any thing like this in certain "free trade" states in our own country? It has not been many years since we stopped in the streets of a certain town to admire a *horse-cart,* which had not *a particle of iron about the cart or harness.* The driver was idling away the day, having employed as his *machines of labor* this little iron-less cart, with a poor little three-quarter bred horse, and a load of at most 5 hundred of corn fodder, looking for a purchaser. The same town has unlimited water power—cotton factories, (but not going,) and the state is filled with coal, and iron; yet it is importing hundreds of thousands of iron, made in England, by men who eat the *cheap labor corn of Russia!* Ah, we are a wise people!

At Norfolk, in Virginia, where thousands on thousands of immigrants *would be* arriving every week, to go by steamers and rail-roads, to their mountain water powers and pastures, to raise sheep and manufacture cloth and iron, if we could establish the *home policy* for which "The Plough, the Loom, and the Anvil" contends, there, at Norfolk, you will see at the market, in these little carts, a *single* small ox in harness. Now, where labor is diversified, and prosperous, the *time* of a *man* is too pre-

cious to be employed, or rather thrown away, upon ineffective and imperfect machinery. Hence it is that such diversification, and such preciousness of time, which always follows that diversification, leads to *all sorts of improvement.* But, says the Legislator for the people in and about Norfolk, ah! the glory, the happiness, the "common sense" of "*free trade!*" and the people throw up their caps and cry Amen! Huzza for free trade! Let us go wandering over the world for the dearest market to sell in, and the cheapest to buy in. Talk not to us, say they, about adapting means to better ends, provided the use of such means is attended with any present sacrifice, however small. Well, we know that to plant and cultivate a good orchard would, some ten years hence, be followed by great profit and great enjoyment; but should we not, in the mean time, be put to certain expense and certain trouble? No! no! let us enjoy to-day, and let to-morrow provide for itself.

Mother England, God bless her, with her cheap starving labor, fed on Russian serf-made wheat, can give us cloth and iron, cheaper than we can make it. Let us then, in the name of *un*-"common sense," buy of her; and besides, ☞ has not Sir Henry Bulwer made it known to us, through the Secretary of State, that any legislation more favorable to the use of our own coal and iron would be "offensive to British public opinion?" and who would incur such a dire calamity? Ah, yes, we are a wise, a provident people!

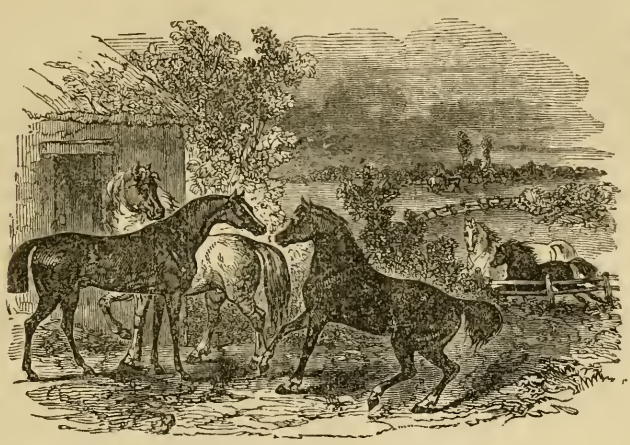
"GIVE US A LITTLE MORE SOUTHERN MATTER,"

Says our Mississippi friend, who inquires about the "big head" in horses. Now we have looked again, over the table of contents of the December number, and find that it contains not less than *thirty* different articles,—*all* of them believed to be practically or morally, entertaining or instructive; and at least two-thirds of them applicable to every part of the United States.

It was only yesterday that a friend remarked to us, that you would have many more subscribers in western New-York, were it not for the impression, that your journal is too much adapted to *southern* people. So it goes. We endeavor, "with a will" to give it a character, that every man who will *read* it, shall say he gets his penny worth. The difficulty is to get its existence and character universally known. See what gentlemen of whose approbation any man might be proud, do say—that if it could be read "it would add millions to the wealth of the country." Such is the testimony in its favor, alike by men in the North and men in the South.

We have not the least doubt, that the friend whose inquiry we wish it was in our power to answer more satisfactorily, could, if he would use his influence, send us at least a dozen subscribers. Nevertheless we will work on to the bitter end, and if no better fate awaits us, the friends of the Plough shall hear our voice from the poor-house or the prison. "It's a disease we shall die on."

Potato Flour subject to ten per cent. ad valorem in England.—An importation having taken place from abroad of farina, or Potato flour, the importer requested that it might be regarded in the same manner as wheaten flour, and delivered at the duty of 4½d. per cwt.; but as the article appears to be not only serviceable for food, but also as an important material in a manufacturing process, it was decided to be liable to the *ad valorem* duty of 10 per cent. as a manufactured article, and ordered to be charged accordingly.—*Economist, Oct.* 19.



THE HORSE—HIS ANATOMY.

About no animals has more been written than of the natural history, qualities and character of the Horse and the Dog. Volumes have been filled with entertaining anecdotes of their fidelity, and proofs of their power and usefulness. Some of these might be repeated, to amuse many of our readers, but at present we have room only to treat of the *anatomy* of the Horse, proposing to offer on that point what, in the way of instruction for the sons of Farmers and Planters, might well constitute a lesson; such as, if our systems of rural education were arranged with any reference to their legitimate and proper objects, would be taught in every country school in the land—a lesson with which, in truth, every man who owns a horse might well desire to be familiar.

And here we cannot forbear to ask, whether such teachings as this would not be as useful, if employed merely to instruct boys in the "*art of Reading*," as are those employed for that purpose, drawn from the traditions of barbarous ages, and the speeches, real or fabricated, of heathen warriors? for they would serve, at the same time, to impress the youthful mind with valuable knowledge, available in the practice of his future pursuits.

Unless it be that we much over-rate the value and appropriateness of papers like these, for cultivators who entertain the noble ambition to have their sons better informed than themselves, in the line of their profession, such instruction will not only prove acceptable to the practical man, but will be esteemed far better adapted to his position, his interests and his duties in life, than mere chronological exactness in events, after which boys are taught to grope in the twilight of history. Who cares to know, to a day, when the Egyptian pyramids were built; when Nebuchadnezzar conquered Jerusalem, or Cyrus went into Upper Egypt? Types have superseded all necessity for monuments and pyramids. For our own part, we confess that we would sooner see a Farmer's son well versed in the skeleton and diseases of domestic animals, than in all the shadows of events which ancient history has brought, into more or less relief, from

the Exodus of the Israelites to that munificent era—the commencement of modern history—distinguished by the reigns of such monarchs as Charles V., Francis I., and that blood-stained butcher of his wives, Henry VIII. Then it is that history begins to take on flesh and blood, and to present something with which we can grapple and sympathise. But to our subject.

The engraving here presented is a tabular enumeration of the bones or *skeleton* of the Horse. Now if Farmers' sons were taught according to the admirable system pursued in our military schools, at the expense of Farmers, the teacher would have this skeleton drawn with chalk on a black-board, to be exhibited to the view of the whole class, and then, pointing for instance to No. 13, or 28, or 35, or any other number, he would require any one of the class to tell him the name of that bone, until the result should prove that the class was well grounded in *this item of a good sound practical education.*

These bones constitute the basis or fabric of the whole animal machine. They are so many levers, acted upon by muscles and tendons, so admirably arranged as to accomplish, in the most effective manner, all those important purposes for which nature designed this noble animal—especially noble when thorough bred, for there *is* much in the blood of Horses, as well as of men, while the former is not liable to *so much uncertainty.*

Of the Skeleton.—The skeleton is the simple, jointed, bony frame, divested of the soft parts.

The natural skeleton is that in which the bones remain attached to each other by their natural connexions, denominated *ligaments.*

The artificial skeleton is made by separating the bones from all their natural connexions, by macerating or boiling, and afterwards joining them again in their natural order and relative position, by wire or other means, so as to imitate as nearly as possible the original, over which it possesses the advantages of cleanliness, distinctiveness, and more or less artificial mobility of the joints.

Construction.—Leaving the head and neck out of consideration, the entire frame will be found to come with sufficient proximity within the limits of a square, formed by drawing perpendicular lines touching the extreme parts before and behind, from a horizontal line, level with the surface of the ground, to another parallel to it, touching the summits of the back. A line extending perpendicularly through the middle of the square, divides the frame into two nearly equal parts, and falls upon the ground, (represented by the inferior horizontal line,) equidistant from the four points of tread; a line drawn in the horizontal direction through its middle includes the trunk within the upper division of the square, the space formed by the limbs, as well as the limbs themselves, within the lower section. The limbs represent four columns supporting the body, the bones composing which, though many of them are obliquely placed, are found, on taking the aggregate of their directions, to maintain their bearing in lines parallel to the common centre of gravity, which may be said to be represented by the perpendicular line extending through the middle of the square. The angular position of these bones renders their motions more extensive and facile, at the same time that they, so placed, present convenient and powerful levers for the operation of the muscles. Futhermore, the bones forming the limbs are superiorly lengthy, and few in number; whereas, below the fetlock, they are small, and consist of several pieces; the rationale of which is, that the long bones are well adapted for extent of motion—the short ones for resistance and multiplicity of movements. The head and neck operate as a burden in addition to half of the trunk, upon the fore-limbs, although the hind-limbs appear the greatest and most capable of resistance: this apparent incongruity is removed when we come to learn that the latter constitute the powerful engines of progression.

Of the multiplicity and variety of pieces, or distinct bones, of which the skeleton is composed, most are found to be double, or to exist in pairs; such are the ribs, most of the bones of the head, and all those of the limbs. There are, however, several single bones: and these may be regarded as the key-stones of the fabric, being, in reality, the media through which the two lateral halves of the skeleton, composed of the bones in pairs, are united together into one entire structure. In this arrangement the symmetry of the whole is preserved most completely, even as completely as if every bone had had a fellow, since both sides of the single bones exactly correspond.

The bones so far influence and determine the form of the soft parts, that in very many, perhaps the majority of instances, the animal is recognized in the appearance of the skeleton: in other examples, however, this is not so remarkable; in all, the resemblance can be traced only in certain parts. In general, the head, chest, and legs—below the knees and hocks—present striking outlines of the same parts in the living animal; whereas the neck, loins, arms, and haunches, have few or no points of similitude.

Division.—The *skeleton* is composed of 238 bones, and is divided into *trunk, head,* and *extremities.*

The trunk is subdivided into spine, thorax, and pelvis.

The head comprises the cranium and the face.

The extremities are four in number—two fore, and two hind.

TABULAR ENUMERATION OF THE BONES.

TRUNK.

SPINE.		THORAX.		PELVIS.	
Cervical Vertebræ,	7	Sternum,	1	Ossa Innominta,	2
Dorsal Vertebræ,	18	Ribs, 18 on each side,	36	Sacrum,	1
Lumbar Vertebræ,	5	Total,	37	Coccygeal Bones, varying from 13 to 18,	15
Total,	30			Total,	18

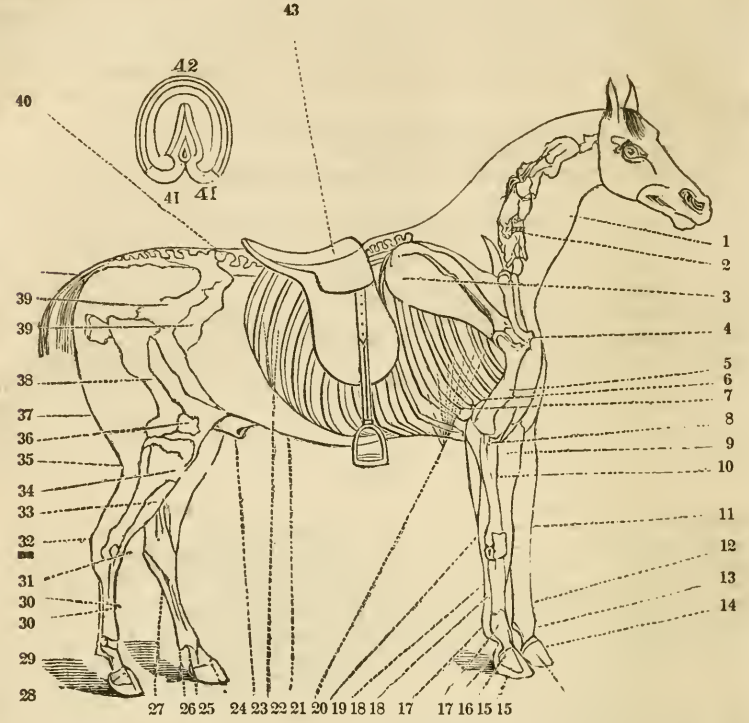
HEAD.

CRANIUM.		FACE.	
Frontal Bone,	1	Upper Jaw. Pairs. Nasal Bones,	16
Parietal Bones—*pair*,	2	Superior Maxillary Bones,	
Occipital Bone,	1	Inferior Maxillary Bones,	
Temporal Bones—*two pairs*,	4	Malar Bones,	
Ethmoidal Bone,	1	Lachrymal Bones,	
Sphenoidal Bone,	1	Palatine Bones,	
	10	Superior Turbinated Bones	
Bones of the Ear. Malleus, Incus, Stapes, Obiculare	4	Inferior Turbinated Bones,	
		Vomer—*single*,	1
		Lower Jaw,	1
			18
		Teeth,	40
		Os Hyoides,	1
Total,	14	Total,	59

EXTREMITIES.

FORE.		HIND.	
Scapula, Humerus, *Shoulder Bones*,	2	Femur—*Haunch Bone*,	1
Radius, Ulma, *Arm Bones*,	2	Patella—*Stifle Bone*,	1
Bones of the Knee.		Tibia, Fibula, *Thigh Bones*,	2
1st Row. Scaphoid, Lunar, Cuneiform, Trapezeum, 2d Row. Pisiform, Os Magnum, Trapezoid, Unciform,	8	Astragalus, Os Calcis, Cuboid Bone, Three Cuneiform Bones, *Hock Bones*,	6
Large Metacarpal Bone, Two Small Metacarpal Bones,	3	The bones below the hock correspond in name and number to those below the knee, *viz.*,	9
Sesamoid Bones—*Fetlock*,	2	Total,	19
Pastern Bone,	1		
Coronet Bone,	1		
Coffin, Navicular, *Foot Bones*,	2		
Total,	21		

The following engraving will illustrate the principal points in the anatomy of the horse.



1. The throat.
2. The vertebræ of the neck.
3. The scapula, or shoulder blade.
4. The shoulder point.
5. The sternum, or breast.
6. The humerus, or bone of the arms.
7. The olecranon process, or elbow.
8. The ulna.
9. The arm.
10. The radius.
11. The knee.
12. The metacarpal bone.
13. The pastern joint.
14. The foot.
15. The coffin bone.
16. 16. The little pastern.
17. 17. The great pastern.
18. 18. The metacarpal bone.
19. The bones of the carpus.
20. The ribs, eight of which are called superior ribs connected with the sternum; the others are called the false ribs.
21. The body.
22. The ribs.
23. The sheath.
24. The foot.
25. The pastern.
26. The fetlock joint.
27. The shank bone.
28. The coffin bone.
29. The great pastern and the lesser pastern.
30. 30. The metatarsal bone.
31. The hock.
32. The bones in the hock.
33. The thigh.
34. The tibia, or greater bone of the leg.
35. The fibula, or small bone of the leg.
36. The patella.
37. The quarters.
38. The femur, or thigh bone.
39. 39. The os innominatum, or bason bone.
40. The six vertebræ of the loins: there are eighteen bones in the tail.
41. 41. The heels.
42. The toes of the foot.
43. The vertebræ of the back.

In our next we shall use the authority we have, and an engraving, to illustrate the *muscular* system, with observations on the proper form and structure of every part as connected with beauty and usefulness.

"BIG HEAD" IN HORSES.

The inquiry from a friend in Mississippi, is not the first by many times and many years, that the same question has been asked of us. We wish it was in our power to give a more satisfactory answer than we can do.

The swelled head is believed to be a disease peculiar to our country, as we have never seen it mentioned in any English or French Veterinary work.

As far back as 1824, we got a very sensible letter from J. F. Brevard, Esq., of Lincoln county, North Carolina, describing the symptoms and prescribing as below. We presume our Mississippi friends are already but too familiar with the symptoms; and as for the remedy, what follows is more to be relied on than any thing we know of.

The disease is said to be very prevalent now in the state of New-York; and the city itself is much infested with "*swelled heads.*"

As with these last, it is never fatal, it only excites the contempt of those who see its ridiculous symptoms, and who know its vulgar origin. When inherited, it is often the spurious fruit of ancestral industry and patient accumulation in the exercise of some useful trade. Sometimes in a lucky speculation in wedlock or bank stock. When it originates with those whom it afflicts, it begins with low overreaching cunning and hard-hearted avarice; and breaks out in disgusting signs of vanity, and airs of self-importance. A common malady leads the subjects of this disease to herd together, and thus get or take the name of "*exclusives;*" being exclusive in nothing so much, as in the shallow conceit of their own consequence.

We have been speaking here of the swelled head epidemic among male and female bipeds; but here is Mr. Brevard's remedy for the disorder when it attacks a much more respectable class of animals:

"The remedy is nothing more than as follows: Take a piece of bar-iron, have it formed into the shape of a chisel, about two inches wide; let it be about as sharp as chisels usually are when purchased from the store, or as a falling axe is when finished at the shop and before it is ground; heat this in a fire until it is quite red—a blacksmith's fire is best, because most convenient.

"Search out a gristle of ligament which extends from near the eye of a horse to near his nostrils. This ligament is easily discoverable, for in any horse it is as large as a lady's little finger, and in some larger than the thumb of a dandy. Apply the edge of the heated-iron across this ligament about midway between the eye and nostril, and sever it by burning entirely in two, to the bone; this must be done on both sides of the head.

"Let the wound then do for itself. If flies should have access to it, and blow it and maggots ensue, this will do no injury. The severed ligature should be prevented from re-uniting again too readily, and the irritated and suppurating state of the wound may be advantageous; and having kept open and sore for some time, it will heal of itself. If the disease has not advanced far in its progress, the head will now gradually and so slowly as to be scarcely perceptible, shrink to its natural dimensions. When it has advanced further the horse may still become serviceable, but the head may never entirely regain its natural shape.

"And there are of course stages of the disease in which no remedy will be effectual. I am aware, Sir, that where a distemper has accomplished its ravages and spent its force, that however malignant and deadly it may have been generally in its progress, yet that at this period some subjects will begin to withstand it, and will recover from its attacks even without the application of any remedy.

"This may have been the case with regard to the cure I have suggested; and I am far from holding it out as a certain and effectual specific for the disorder; butsince the experiment is one easily made, and I do assure you is attended with no danger, I hope those who have applied to you for information on this subject will give it a trial, and communicate to you the result."

ANOTHER AND MORE EFFECTUAL CURE.

As soon as the swelling on the side of the face appears, take a piece of white arsenic about the size of a common field pea, (or about six or eight grains pulverized and wrapped in fine paper, of a size only sufficient to contain it,) make an incision in the skin, immediately over the hard tumour, insert the arsenic (or the paper containing it,) and with a needle and thread make one suture or stitch, tie the ends of the thread in a hard knot, bleed the horse, and turn him out alone in a good pasture, or if it is cold weather, put him in a stable, removed from other horses, and feed him on light food—in a few days the effects of the arsenic will be discoverable by a considerable swelling of the head, nose, and face, which will increase until the power of the arsenic is exhausted—if both sides of the face are operated on at the same time, the head will swell to an enormous size—in about a month, or six weeks, the arsenic will have developed its efficacy by the appearance of a circular piece of skin, and the porous bone of the face which extends as far as the seat of the disease, or the influence of the arsenic on the affected part; this circular development extends as far as the affected part only, and is quite callous and nearly detached from the sound skin, leaving the wholesome flesh in its natural state. In a month or six weeks longer, this circular part becomes entirely detached on its periphery from the sound skin, and adheres to the side of the face by a few slight integuments about its centre, which soon decays, (or it may be cut off,) and the diseased parts drop out in a mass, leaving a hideous wound; then may be seen the porous bone of the face, resembling honey-comb, which soon becomes covered with sound flesh and skin: the wound may be soon healed by using common applications, though I have made use of what we farmers in the country call pot-liquor, as a wash, and anointing the place with an ointment made by bruising the leaves of the common poke-weed, (*phytolacca decandra*) and extracting the juice by pressure, and stewing it in hog's lard, or of the Jamestown weed, or thorn apple, (*datura stramonium*,) prepared in the same way. These applications may be made use of with advantage as soon as it is discovered that the parts begin to separate. If the weather be warm it may be necessary to anoint the parts with a mixture of common tar and hog's lard, or the juice of elder stewed in hog's lard, in order to keep away the blow fly, which will be attracted to the parts by the offensiveness of the scent emitted. It cannot be expected that a horse which has thus been operated upon, will regain the beauty of his head, particularly if he be an old horse, or has been affected on both sides of the face, or the disease has been suffered to run too long before applying the remedy: this is evidenced by the appearance of my mare. I suffered the disease to run too long, because I was fearful that the arsenic might injure the foal, but was induced to risk it rather than lose the mare: the stallion on the contrary, exhibits the effects of it in but a slight degree. It may be proper to remark, that a less quantity of arsenic will answer for a colt than for an old horse; and that it ought to be inserted as high up on the face as the seat of the disease will admit of; perhaps on the upper edge of the swelled part will answer the same end.

Another remedy has been communicated to me, which is more simple; and if it be a remedy, certainly possesses great advantages over the one on which I have been treating. I have never known it tried, but I am induced to believe that it is a remedy, both from its analogy to the arsenic, and from the authority from which I derived my information. It is this: Instead of the arsenic, take half a pint of strong ashes, (hickory I suppose,) put them into a tin cup, (of about a pint measure,) smaller at the mouth than at the bottom, say about one and a half inches at the mouth in diameter; fill the cup or pot with water, and let it boil for half an hour, or until the water has been evaporated, or absorbed by the ashes, cord the horse's nose in the usual way, or otherwise confine him, in order that he may be still, and apply the mouth of the cup to the part affected, with the ashes quite hot and nearly dry, having previously covered it with a thin cloth to prevent the ashes from coming in contact with the skin of the horse, and hold it in that position until the heat has subsided, when it may removed: in a day or two the parts, will exhibit a gluey exudation, which will disappear in the course of a week, leaving an inconsiderable sore like a burn, which may be soon cured by treating it as such. It may be necessary in some cases to make the second application. The horse may be used as usual at the time, and when the wound heals up, scarcely any scar will remain.

Or, take blood from the neck vein and bathe the swelled parts with spirits of turpentine once or twice a week, rubbing it in with a hard brush until you discover the swelling is stopped: the lumps always remain, but as they cease to grow, the horse gets better.

Or, give stramonium (Jamestown or Jimeson weed) in doses of one drachm, mixed with his feed for several days, then turning him out for two or three months.

THE LATE CONVENTION OF MINERS AND MANUFACTURERS AT RICHMOND.

It was only at the moment of going to press, that we met with the *Reports* of committees appointed at the above convention. Does any one need to be told, that every man, woman and child employed in *home manufactures*, is a sure customer for the products of the American plough and of American pastures? where else are they to get their beef and pork, their flour and potatoes? where else to get their cotton and woollen clothing, but from American cotton fields and sheep pastures? So at least it should be, if we had that protection, which would countervail the labor of the Russian *serf*, and the English *starving operative*.

The editor of the "New-York Dry Goods Reporter," who attended the convention, says: "The utmost harmony appeared to prevail, and all Democrats as well as Whigs—and there were many of the former school of politics in the Convention—appeared to feel that some alteration must be made in the present tariff, and that right speedily."

We have room only at present for a single one of *these* reports:

REPORT OF THE COMMITTEE

Appointed to Inquire into and Report the Condition of the Coal and Iron Trades.

We beg leave to report that the trades in coal and iron in Virginia, to which our inquiries are confined, are greatly depressed—indeed, we may say they are nearly broken up.

In regard to the coal trade, we have not been able to obtain accurate returns, except from the Falling Creek pits in Chesterfield. These being the oldest and best known pits—having been for more than half a century, and being still constantly worked, and having at this moment a larger capacity for production than they ever before possessed—we assume their condition as a safe standard by which to measure the prosperity of the coal-mining business in this region. We have to report, that under the influence of the tariff of 1846, and the largely increased foreign import occasioned thereby, and without any other unfavorable cause whatever, and notwithstanding very considerable reductions in the cost of transporting their coal since the passage of that act, and still greater reductions now secured to them for their future transportation—this product for market has dwindled to one-half its amount in 1846—some of the mines have been abandoned, and mineral property in that region has come to have little value.

We are assured by other coal-miners in Eastern Virginia, that their condition is quite equally depressed and discouraging.

Meanwhile, the domestic consumption of bituminous coal has been much increased, and England and Nova Scotia have occupied our markets with their coal to an extent without precedent heretofore, supplying, to the exclusion of our coal, nearly three times the quantity heretofore furnished by them.

The condition of the iron trade is still more depressed and discouraging. Under the influence of former duties, relying on the continuance of the prices of foreign iron which prevailed in 1846, and not doubting that the domestic product, pig-iron, would be greatly cheapened in its transportation by the extension of the James River Canal authorized in 1847, many persons embarked in the manufacture of bar-iron here, and of pig-iron in the mountains. All—or so nearly all that the exceptions scarcely deserve mention—have abandoned their undertakings. The furnaces then existing, or made afterwards, are nearly all closed. Of the four rolling mills two have stopped—one is doing not more than third-work, and the fourth, employed in the manufacture of nails, is subjected to the depression of that business, resulting from other mills established for different purposes being driven into that manufacture as the only one safe from foreign competition, and so producing a glut in the nail market.

And this result has happened on the eve of the completion of the James' River Canal extension, in view of which many of the works were undertaken. The present capacity of the mountain works, near the James River, now established, is equal to the production of at least 25,000 tons of pig iron annually—their production the present year does not exceed 9,000 tons—and although the canal is expected to be opened to the mouth of North River by the first of February next, affording a reduction of three dollars a ton on the cost of transportation, and is also expected to be opened to Buchanan during the

next year, yet we are assured that the product of pig-iron of that region is not likely to exceed 2,500 tons during the next year.

We exhibit herewith a tabular statement of the Virginia furnaces, showing their capacity and their production during the last year. It will be seen that we have 50 blast furnaces capable of producing yearly 54,500 tons of pig-iron, which now are not producing more than 11,700 tons. Estimating each of these furnaces to have cost $20,000, which is a very low estimate, we have an amount of one million of dollars. At $25 a ton for pig-iron, which is a low price, these furnaces would produce to the State the sum of $1,362,500. Their product this year will not exceed $300,000. Their product next year will be very much smaller.

In submitting this report of the state of the coal and iron trades of the country, we think our duty would be ill performed, unless we should offer some further remarks.

We have to say, in regard to the coal trade, that while the government, during the last year, has gained some $40,000 of additional income by the increased importation of foreign coal and iron under the tariff of 1846, Virginia has lost at least $200,000 by diminished production; she has lost, in addition, the profit which would accrue to her works of internal improvement from the carriage of the additional quantity of coal; and she has lost what is incalculably more than all these—she has postponed the development of her resources, allowing other States to pass her and put her back in the great career of improvement which belongs to this age, peculiarly to this country.

This remark applies with equal force to the iron trade of Virginia—of which, if properly developed, it would be difficult to overstate the importance; yet which, though greatly superior in natural advantages to the same trade in Great Britain, is wholly unable, under the tariff of 1846, to compete with Scotland or Wales.

It is a matter of not less mortification than astonishment that Virginia with an area of coal measures covering not less than 21,000 square miles, very much of which lies on or near navigable waters, and is capable of yielding all the varieties of British coal, and of equal quality, should be reduced to the actual production of less than 200,000 tons of the value of $650,000, while Great Britain, with little more than half the extent of coal measures, produces annually 37,000,000 tons, of about the value of $37,000,000 at the mines, and $80,000,000 at the markets of sale.

And in regard to the iron trade, while Virginia has an unlimited supply of the finest ores, easily accessible for use and transportation, with the greatest abundance of coal-wood and limestone for their manufacture, yet under the operation of the present revenue laws of the country, her production, in spite of all the efforts of the State to encourage it, has shrunk to an inconsiderable amount, and is in danger of utter ruin.

The import of British iron during the last year was about 320,000 tons— requiring for its manufacture nearly 1,500,000 tons of coal—more than 1,000,000 tons of ore, and about 400,000 tons of lime stone. All these, and more, Virginia could easily have furnished, and to that extent have developed her mineral wealth and encouraged her industry; and yet she has hitherto been content to leave to Great Britain the profits of its production; although the duty paid by Virginia on the imported product would have been equal to 5 per cent—95 per cent of the whole import being made north of Mason and Dixon's line, and there consumed.

We therefore recommend to the meeting the adoption of the following resolutions:

Resolved, That in the imposition of duties for the support of government, regard ought to be had to all the interests of the country with a view to foster and promote them, and especially with a view to secure them, so far as may be, against the fluctuations of European trade and production.

Resolved, That in order to give prosperity to the mining and manufacturing interests of the country, nothing more is necessary than such moderate and stable discrimination in the imposition of duties, as will enable the domestic products fairly to compete with the foreign products of like kind in our markets.

Resolved, That in our opinion the present system of duties fails to accomplish the objects above indicated in several material respects—particularly in leaving the domestic products of coal and iron essential to our natural security and defence, requiring heavy outlays, and needing the utmost practical stability—to depend on the fluctuations of European trade.

HOLDEN RHODES, Chairman.

How to know when Potatoes are Ripe.—Can any one tell? There must be periods of immaturity of ripeness and of decay, in the vitality of the potatoe, as well as the apple, the cabbage and other things; a period when its farinaceous properties are at their best. Green apples may do, with the aid of sufficient sugar, in *pies;* but bad enough then. Is there no rule by which to know that the potatoe, the cabbage and other vegetables are not entirely ready for the kitchen?

EXPERIMENTS IN THE USE OF MUCK.

BY JAMES A. HAMILTON.

Nevis, Dobbs' Ferry, Dec. 19, 1850.

My Dear Sir :—I received yesterday your kind note of the 14th inst. from Philadelphia. I am gratified to learn that you are a resident of New-York, where I will have the pleasure of visiting you, and from whence you can with so little trouble get to this place, where you will always be most welcome. If you walk to the corner of Fourteenth-street and West-street or Tenth-avenue, you can there take the cars, and at Dobbs' Ferry, you will find my carriage to bring you here at any time you will come, as this is my residence the year round.

You ask me some very pertinent questions regarding my operations with Muck; I will take this occasion to tell you what I have done. The subject deeply interests me; and I hope to have the benefit of your suggestions. I have studied Dana; I have read every other work which has fallen in my way, and I have conversed with very many who have used this article as a manure, and let me add, that in this county from its broken character, there are great resources of this fertilizer, and very few farmers who have not in opening their ditches, &c., used it. I have made experiments and I am continuing to do so on a very large scale; at the same time I am very much at a loss as to what is the best and least expensive compound.

The analysis which I think was negligently made is as follows:

100 parts of the dried Muck contains as follows:

"	Soluble and insoluble Geine,	81·03 parts.
"	Silica,	12·46 "
"	Alumina,	4·80 "
"	Oxide of Iron,	1·11 "
"	Lime and Magnesia,	60 "
		100·00

The proportion of the Soluble and Insoluble Geine ought to have been ascertained and stated as I believe a principal object in composting it, is to make that soluble which is now insoluble.

I intend to submit it to another analysis.

My farm of three hundred acres, is situated on the east bank of the Hudson, now about twenty-two miles from New-York. It is a light sandy soil of which Dana says, "none is preferable to be cultivated or restored." Having as a part of the Manor of Philipsburgh been subjected for many years to the exhausting process of tenant cultivation, by which every thing was taken from the ground and nothing returned to it. The land, particularly that on the river, was, when I purchased, completely worn out, so much so as that on some of the fields on my lawn clover would not grow.

On the east part of the farm, about three-quarters of a mile from the river, on a very elevated position there is a *Dish* five or six acres in extent, in which there is decomposed vegetable matter: leaves, roots, branches, and even the trunks of large trees; which I have probed to the depth of fourteen feet. A small stream fed by springs runs through it, and it receives the wash of the adjacent grounds.

I have run a rail-road into this dish about 280 feet, on which I move a dirt-car that will contain about two cubic yards, by a pair of oxen; from this it is dumped upon the solid earth. This track is capable with little trouble of being shifted as may be required. During all the winter, most of the autumn, and parts of the spring and summer; one and sometimes two men are employed in getting the muck out, and two pair of horse and an ox team are employed at the same time in hauling it down to the barn-yard and to those parts of the farm where it is to be used. Indeed, this is the business of this force at all times when not otherwise engaged on the farm.

Last season, between August and April, I brought down 1415 loads, part of which was put into the barn-yard and of course composted with the manure of my stock, and another part was treated as will be hereafter particularly mentioned.

The first experiment I made was by applying in a liberal quantity, a part of that which had been in the barn-yard for about ten weeks to a field of four acres after a crop of corn; it was ploughed in and sowed with wheat and timothy. The yield of wheat was twenty bushels to the acre, and the growth of the timothy is most satisfactory.

The second experiment was on a field of five acres, and one-third from which a crop

of corn had been taken during the course of the fall and winter. I drew on this field 433 loads, (a load estimated to contain twenty cubic feet,) giving to 4 acres, which were measured off, 100 loads each, and to the fraction of an acre its proportion. In the spring I drew from the barn-yard 100 loads, which were put upon the fifth acre. I applied:

To acre No. 1 50 bushels bone dust, or one-half bushel to each load.
" " 2 405 lbs. potash, dissolved and sprinkled over each load in equal quantities.
" " 3 100 loads, taken from the barn-yard Muck and manure.
" " 4 7 bushels of salt, and 7 blls. lime, (caustic,) in a thin paste, divided into 100 parts.
" " 5 162 bushels of wood ashes.

After being thoroughly mixed, as the materials were applied, the whole was spread, ploughed in, and planted in hills with Mercer potatoes. The yield was *only* 447½ bushels of all sizes:

	Bushels.	*Cost of Manure.*
Acre No 1, Muck and Bone Dust,	65, very small,	$22 50
" 2, Potash,	81, large,	24 57
" 3, Muck and Manure,	120,	— —
" 4, Lime and Salt,	55½, small,	6 50
" 5, Ashes,	83, "	20 00
⅛ of an acre, Raw Muck,	43, good size,	— —
Total,	447½	

There was very little rot in the field, and most certainly much less in proportion in either acre than in that where the manure was applied. After the potatoes were taken off, the field was prepared and sowed with wheat, 2 bushels to the acre, and timothy, 10 lbs. to the acre, and both have come up satisfactorily.

The third experiment was with corn. I put 230 loads, taken from the barn-yard Muck and Manure, on a four acre lot, (a very much impoverished soil,) planted it with corn in hills, which yielded 391 bushels in ears, and from one acre, esteemed the best which was measured off and gathered by itself, 126 bushels.

I am now hauling down 25 loads a day, and will continue to do so until I get 2,000 loads. 300 are in the barn-yards, 200 in heaps mixed with stable-dung, and the residue will be ripened in the fields, as I may be advised.

You are at liberty to make what use of the above you please. If published, I wish such of your readers as have experience would advise me as to the proper course to pursue.

With sincere regard, yours, JAMES A. HAMILTON.

NEW MODE OF MANUFACTURING FLAX.

On few things have mechanical ingenuity and the science of chemistry been more exercised than in devising some thing to save labor; in the preparation and processes for flax manufacture. As every thing seems now-a-days to be giving way to the wide and resistless progress of invention, we may expect this difficulty to be overcome. We find the following in a last month's number of the Mark Lane Express:

It is stated that the experiments now in progress at Manchester to test the advantage of the new method for bleaching flax, invented by M. Claussen, appear to afford incontestable proof that the material thus supplied will be of a nature to produce an important effect on our cotton manufactures. By this discovery the necessity for the steeping process is done away with, and the splitting and softening of the fibre is so effected as to fit it for the requirements of the machinery hitherto solely adapted to the spinning and weaving of cotton wool. The texture and softness of cotton is gained, together with the durability of linen, unaccompanied by the cold paper-like surface which has hitherto been peculiar to it; and as these advantages are alleged to be realizable at a cost of production considerably below the present price of cotton wool, the question becomes not merely one of importance as regards the regeneration of Ireland, but also as affecting the comfort of the people at large and the vital interests of our manufacturing population. On the 7th inst. we described the proposed Chartered Company for promoting the growth of the staple by the offer to purchase it at a specified price, and as every effort is being used to induce the Irish agriculturists to make seasonable preparations for the extension of the next crop, it is probable that before the lapse of another year enough will have been accomplished to warrant a broad and definitive opinion as to the ultimate results that may be anticipated from the movement.—*Times.*

HORTICULTURAL MEMORANDA.

FOR THE "PLOUGH, THE LOOM AND THE ANVIL."

In Gardening occupations January is the most inert month of the year; yet those who pursue any vocation with zeal, will have a time for every thing, and a place for every thing. The experience of the past year must add a mite to our knowledge for the future. Where crops have failed in certain rotations, avoid them for the future; study over the nature of the garden patch, and see what improvements can be made. Is there no waste ground; no dilapidated fences; no hollows to fill up, or heights to reduce; no bushes to prune, or hedges to trim; do the walks require a few loads of gravel or tan? Now is the time—delay not. Spring will overtake you—be prepared for it.

What early crops do you intend to prepare for? Be sure of a full stock of early Cabbage, early Tomatoes, Egg Plants and Celery. To ensure these it is requisite to have a Hot-Bed, or Hot-Pit, an essential perfectly at the command of every farmer and gardener. I hear some say "I have not got it." Pray, is it so?—then do not go without it another season, when early cabbage brings six cents a head, and often double that sum, and early tomatoes fifty cents a half peck. But perhaps you say "I don't sell or go to market." Then you are living at ease, and require them the more for your own table. There are many ways of getting up a hot-bed, but the method we propose is the saftest and cheapest. Select a dry sheltered spot in the garden, or any contiguous quarter, protected from cattle and cold winds, fully exposed to the south, south-east, or east, dig a pit 18 inches deep, 6 feet wide, and any length you require, from 6 to 60 feet, procure sods, and build them round the top of that pit, at the back 18 inches and the front 12 inches high, to which bank up the earth that was thrown out of the pit. When finished, the pit will be 3 feet deep at the back, and 2½ feet deep at the front. Place pieces of timber; scantling 3 by 4 will do, or in fact any thing that will support sash —where sash cannot be procured, do not despair; saw some pieces of boards into 3 inch strips, nail them into oblong squares—say 3 feet wide and 6½ feet long, or any length to cross the pit; nail on these strips, or what we will call skeleton shutters, thin domestic muslin, which can be bought at 6 cents a yard; oil it if you can, to prevent it rotting with moisture. When the above are all ready, procure manure from the stable-yard that has undergone a partial fermentation; shake it all regularly into the pit, treading it with the feet, till within 4 or 6 inches of the rafters, or cross pieces; allow it to remain one week protected from cold, snow, or rain, by that time it will have settled; procure rich light soil, in sufficient quantity to cover the whole 6 inches thick; in a week level all the cracks and interstices, making it fine with a smooth surface, already for the seed; make light furrows from back to front with the finger 6 inches apart, wherein sow your seed about the first week in February; cover with the cloth or glass-sash, giving plenty of air at the back during sunshine, by elevating it 4 to 8 inches; at night shut up all close, and cover the whole with boards, mats, straw, or fodder—in fact, any material to keep out the cold. If the above simple arrangements cannot be gone into, any farmer can obtain warm stable manure, which turn into a heap for 8 or 10 days, that the rank vapour may pass off, when it may be placed into any form to suit the sash, but not into a smaller body than 2 and a half feet high and 5 feet wide, the length to be in proportion to the requisite wants;

make a frame of boards 15 inches high at the back, and 10 inches in front' sloping towards the sun, on which place the sash. It is important that the dung-bed should be one foot larger all round than the frame. The bed should be built square up, and regularly and evenly beaten down with the fork. Place on it the rich soil. Shut close for a few days, to draw up the heat. Air should then be admitted during the day, to allow the steam to pass off, which generally does in 4 or 5 days; after which, sow the seed as directed above. The best Tomatoes are the *Large Red*, or *Baltimore Smooth Large Red;* Cabbage, Early York and Large Early York; Egg Plants, the Long Early and Large Prickly; Celery, the *White Solid* is most in demand.

The above plain and simple details we think will make any farmer a hot-bed, as the whole materials are at his hand, and will employ his leisure hours, and afford a handsome remuneration for the outlay.

THE "GREAT WORK-SHOP" OF THE WORLD.

THE exports of the produce and manufactures of England and Ireland in the year 1849 amounted in the aggregate to £63,596,025—say $300,000,000. These exports were taken by 48 different countries; and, reader, what country do you suppose proved to be the *largest* customer to the great work-shop? Would you suppose it was a country having 30 states, some single ones of which are larger than England, and many of them abounding in all the elements for producing *these very manufactures and produce*, except her *cheap, down-trodden labor?* Yes, to our shame be it said, it is but too true—we are her largest customer for such things.

To France she exported - - - - - - -	£1,951,269
Russia, - - - - - - - - - -	1,572,592
Russia and France united, - - - - - -	3,523,861
British Possessions in North America, - - -	2,280,364
	5,804,225
British West Indies, - - - - - -	1,821,146
Foreign West India Islands, Cuba, &c. - - -	1,441,212
China, - - - - - - - - -	1,537,109
Total, - -	10,603,692
To the United States, - - - - - -	£11,971,028

Thus it is seen that we, with all our boundless capabilities for producing all she sends us, take from her six million eight hundred and thirty-six thousand six hundred and eighty dollars *more* of her produce and manufactures than *all France, Russia, her own possessions in North America, her own and all other West India Islands, including Cuba and China; all united!* Is it any wonder that the Edinburgh Review should call us a "*colony of Great Britain in a matured state?*" Truly, let us say again —we are a wonderfully wise and provident people! But, reader, why is it that we are such good customers to her? Because our partial enjoyment of protection has given us *capacity* to consume. Had we continued to enjoy the sort of unlimited free trade with her that her Canada does, exchanging our hand-made products against her products made by machinery—like Canada we should have been enervated and impoverished. Let us all then join the free trade league—that is, all who would put us on a level with Canada!

PRICES CURRENT OF AGRICULTURAL STAPLES IN NEW-YORK.

BONES.—If not the direct fruit of the plough, they begin to contribute essentially to increase the products of agriculture. The country reader will regard as a curious item the report of 40,000 *shin* bones, from the Rio Grande, at $11 per thousand. These are worked into knife-handles, and various other things, and the parings at last go as manure upon the land. We have seen them helping to make an indescribable *omnium gatherum* in the stercorary of R. L. Colt, Esq., at Patterson, N. J.

BRISTLES.—In a late number we gave a very curious paper (the first we ever saw from the scientific pen of P. A. Browne, of Philadelphia, on the thickness, length, elasticity, &c. of the bristles of different countries. The reader would be startled at the amount paid annually for imported bristles, on which the duty is but 5 per cent. *ad valorem*, which means too generally whatever price the foreigner finds necessary to under-sell the American producer.

BRISTLES.—Duty 5 per cent. *ad val.*

American,	— 25 a — 40
Russia Okatka,	1 37½ a 2 50
Russia First and Seconds,	— 35 a 1 00
Russia Souchoy,	— 60 a — —

COTTON MARKET.—*Friday evening, Dec.* 20, 1850.—The market for the past week has been drooping. Sales small. Holders have been anxious to sell, and a decline of a cent per lb. on Uplands, and a half cent per lb. on Gulfs has been the result; and even at this reduction there has been no anxiety to buy. The receipts at all the shipping ports are 605,000 bales, against 656,000 bales same time last year. Stock on hand in this city, 31,000 bales. The following are the quotations of the day:

	Uplands.	*Gulfs.*
Ordinary,	11¾ a 12	12 a 12¾
Middling,	12¼ a 12½	13½ a 13¾
Middling Fair,	12¾ a 13	14 a 14¼
Fair,	13¼ a 13½	14½ a 14¾
Good Fair,	none.	none.

Freights to Liverpool 3-16d.; to Havre, ⅜ c.

GRAIN.—Wheat,	Genesee,	$1,17 to $1,20
	Canada, in bond,	1,05 to 61
	Ohio,	95 to 1,04
	Southern,	90 to 1,10
Rye,		77 to —
Corn,	Northern Yellow,	69 to —
	Southern Yellow, new,	64 to 65
Barley,		85 to 90
Oats,	Northern,	46 to 47
	Jersey,	42 to 43
	Southern,	— to —
Peas,	Black-Eyed,	— to —
White Peas,		— to —
" Beans,	Southern,	— to —
" "	Northern,	— to —
Canadian Peas,		70 to —

HAY.—Duty 20 per cent. *ad val.* North River is in better demand, and prices are higher. The sales reach 6,000 bales, at 60 a 85 c., cash. North River, in bales, per 100 lbs., 50 a 62½ c.

HEMP.—Duty Russian and Italian, 30 per cent. *ad val.;* Manilla, Jute and Sisal, 25 per cent. *ad val.* Sells in a steady way at our quotations.

American Dew-Rotted,	$1 05 a $1 20	Russia,	$2 05 a $2 20
" Dressed,	1 45 a 1 85	Jute,	75 a — 80
" Water-Rotted,	1 90 a — —	Sisal,	8½ a — 9
Manilla,	— 10 a — —	Italian,	2 10 a 2 20

TOBACCO.—Duty Leaf and Unmanufactured 30; manufactured, 40 per cent. *ad val.* Is in fair request, with sales of 150 hhds. Kentucky, 8½ a 12½ c.; 125 Maryland, 6¾ a 7¾ c.; 200 bales Havana, 23 a 37½ c.; 100 Cuba, 26 c.; 40 cases Florida, 20 a 32 c.; 30 new crop Connecticut, 12½ a 17 c.; and 307 bales St. Domingo, and 207 Baracoa, on terms not public.

Virginia, per lb.	7 a 10½ c.
Kentucky,	9 a 14 c.
Mason County,	11½ a 15 c.
Missouri Lugs,	7 a 8½ c.
Maryland,	6¼ a 9 c.

WOOL.—The editor of the New-York Dry Goods Reporter, from which paper the above quotations are taken, says of the Domestic Wool Market:

New-York, Dec. 20, 1850.

We are free to confess that absence from home has prevented us from giving our wonted attention to this market, and therefore our report must necessarily be less minute than usual. We learn, however, of sales to the extent of 30 a 40,000 lbs. Fleece, of the higher grades, at full prices, some of which has been bought on speculation. The operator predicates his hope on the short supply, rather than the ability of the manufacturer, as it is morally certain, that unless an advance in fabrics should be manifest, and that "right speedily," manufacturers must stop or break. We quote:

American Saxony Fleece,	45 a 47 c.
" Full-Blooded Merino,	40 a 42 c.
" ½ and ¾ Merino,	36 a 40 c.
Super-Pulled Country,	36 a 28 c.
No. 1 do do	33 a 44 c.
Super do City	37½ a — c.
No. 1 do Lambs,	33 a — c.

GRASSES TO BE EMPLOYED IN LAYING DOWN LAND FOR PERMANENT PASTURES, AND THE QUANTITY OF SEED.

In England the best judges recommend as follows:—Readers of more learned works, will do well to remember the *common* names, which are here given, as well as the Latin, as they may often meet with the latter without the former; what is here called cocksfoot, means orchard grass, which resembles the sole of a cocksfoot.

Alopecurus pratensis, or Meadow Foxtail, 1 lb.; Avena flavescens, or yellowish Oat Grass, 1 lb.; Dactylis glomerata, or Rough Cocksfoot, 2 lbs.; Festuca duriuscula, Hard Fescue, 2 lbs.; F. heterophylla, various leaved Fescue, 1 lb.; F. rubra, Creeping Fescue, 2 lbs.; Lolium itallicum, Italian Rye-grass, 3 lbs.; L. perenne, Perennial do., 5 lbs.; Poa nemoralis, Wood Meadow, Grass, 2 lbs.; P. pratensis, Smooth-stalked do., 1 lb.; Medicago lupulina, Yellow Clover, 1 lb.; Trifolium pratensis perenne, Perennial Red Clover, 3 lbs.; T. repens, White Clover, 4 lbs.

Seedsmen ought to know all about it.

For Bathing Sheep to Kill Vermin.—One wine-glass full spirit of tar, 1 lb. soft soap, half pound tobacco leaf, for 20 sheep. Make a decoction of the tobacco; mix this with as much water as will afford a quart to each sheep. An over dose of the spirit being dangerous, put a glass of this into each quart as required, shaking the vessel well before running it on the sheep. A man will bathe 60 sheep per day, with the assistance of a boy to pour on the mixture. Cost per sheep about 1½d. This kills all vermin, and is also a good cure for scab. When properly done, the wool is white. Principally practised on mountain sheep. For the last three years I have used a mixture called "Turpentine Bath," prepared by Mr. S. Brown, Haddington. Ten pounds of this mixed with 2¼ gallons of warm water will bathe 20 sheep.

Mr. J. S. S., Editor "P., L. & Anvil:"

In reply to an article in the October (?) number of your Journal, suggesting the conversion of the privy emptyings of this city into fertilizing matter as a source of profit to the manufacturer, and of great advantage to the farming interest in the vicinity, I beg leave to state, that I have for some time had the matter under consideration, and expect to commence the enterprize at an early day. The plans and arrangements are now being matured under the counsel of Mr. Campbell Morfit, analytic and consulting chemist, Philadelphia, with the view to the production of a deodorized poudrette, which will contain all the constituents of the excrements, ammoniacal as well as earthy and saline, in a condensed and potential form. W.

Washington, Oct. 20, 1850.

We had penned a notice of the New-York Tobacco Inspection Warehouse, with its excellent accommodations and arrangements, but are obliged to defer it.

NEW-YEAR'S SALUTATION TO THE PATRONS OF THE "PLOUGH, THE LOOM, AND THE ANVIL."

Such, kind readers, is the uniform course of our labors in your service, that but for the firing of crackers, and the jingling of Christmas bells, we might have forgotten to salute you with a "Happy New-Year," as now we do, more in gratitude than common courtesy.

Since the advent of 1850, as in the preceding year, not less than One Thousand were added to the list of our patrons, many of them saying, almost in the same words, "It's the very thing that was wanted to open the eyes of the farmer and planter, to the true sources of agricultural prosperity!"

From the good offices of such friends, and the gratuitous assistance of able correspondents, has it resulted that this Journal can already, not only walk along, but is moving ahead in the strength of its own good purposes; nor, as far as his humble labors could have effect, has the Editor any cause to despair of their ultimate accomplishment; but even as the most violent changes of wind, occurring at distant points require time to traverse wide expanses of sea and land; so changes of public sentiment, on great public questions, under the slow judgments of the people, do not manifest themselves in a day or a year. In this case too, as respects protection and "free trade," the deliberations of the people have been sorely interrupted by questions involving the very existence of the Union; yet what impartial observer can fail to have seen, that even the cultivators of the soil, the slowest to think, and the last to be moved, (except perhaps at the instigation of some party demagogue for his own sinister purposes.)—Yes, that even the tillers of the soil, in states hitherto most abandoned to the fallacious cry of "free trade," have begun to perceive that, as with the miller and the blacksmith, and the family shoe-maker; so with the weaver of cloth and the maker of iron, the mason, the carpenter and the tailor, and all the various industries to which advanced civilization gives birth and improves—the nearer they are to each other for mutual custom and support *the better for them all!* Yes, the most reckless as well as the most deluded, begin now to see that with concentration and diversity of employment, comes the *power to consume*, and with it, accumulation of population and wealth and improvement in every social art. Hence it is that every one witnesses with so much pleasure, that in Maryland, Virginia, Georgia, Alabama, Tennessee, Kentucky, aye, in all the south and west, the conviction is spreading, and an obvious effort is being made, to realize the advantages of having the Loom and the Anvil near to the Plough and the Harrow. Hence it is that the public mind in these states is undergoing manifest agitation and change in favor of domestic manufactures, to work up their own materials, and in favor of rail-roads to transport the elements and products of domestic industry. Very soon will they begin to acknowledge that yet more effectually to bring the consumer to the side of the producer, they should make their rail-road iron at home, feeding and clothing the labor employed in its fabrication, instead of importing it from the so-called *mother* country! It is too, to be no less clearly observed, that all these states are beginning to grow in population and wealth, and political power and consequence, *exactly in the ratio of their progress* in carrying into practice the policy here indicated!

Let any one compare the state of things, and the signs of public sentiment, in those states now, with what they were when, for the first time in an agricultural paper, the editor of this Journal distinctly opened in the "Farmer's Library," near three years ago, the question which the people of this country have yet fully to decide—to wit: "Shall our cotton be sent to the looms of other countries, or should the looms be forced to come to the cotton?"

To have this question properly understood and decided as it must be by the *agriculturists* of this country, (applying it to our wool and iron, and other great elements of domestic industry and national independence,) prompted the establishment and will continue to be the aim of the "Plough, the Loom and the Anvil." Not for any special concern felt for the manufacturer's *per se*, be it admitted, but because we are thoroughly persuaded that as the keel lies all along at the bottom of the ship, supporting the superstructure, so is the protection of all domestic industries, the substratum of our agricultural industry—the great industry of the nation; the one to which our life and labor have been and will continue to be devoted; the one for which we pray, as for our daily bread, that for it, the policy of the country may *multiply prosperous consumers at home.*

And now reader, as to any suggestions we have to make of a "practical" nature, to which we devote some forty pages monthly; (for we are well aware that there are many who think that all that is needed for agriculture, is to know how to plough and when to sow; how to manure and when to reap,) in a mere New-Year's greeting like this, any regular dissertation would be misplaced and the only question is, how we shall best condense some words of salutation and advice, to the farmer and the planter, on this opening of a new-year, when, as the cautious mariner occasionally uses his instruments to deduce from a review of his courses and distances, the whereabouts of his ship, so the most careless tiller of the soil may be supposed, at the opening of a new-year, to revise the past and to amend his system of management? To express then our own persuasion of their duty and their interest, in the briefest terms, we would earnestly implore the free cultivators of American soil, never more to lie easy in their beds, until measures have been taken that look to securing for those who are to follow them, *education in stricter reference to the practice and improvement of their own art*, and to the philosophy and sciences that immediately belong to it. And oh! that to this heartfelt exhortation, we could hear every farmer in the land, as with one voice respond, with Hamlet to the apparition of his murdered father,

> "Yea, from the table of my memory,
> I 'll wipe away all trivial fond records,
> All saws of books, all forms, all pressures past,
> That youth and observation copied there;
> And thy commandment all alone shall live
> Within the book and volume of my brain,
> Unmixed with baser matter."

And why should not your sons be all thus carefully instructed in the mechanical powers and principles involved in the construction of a plough or a wagon, a road or a bridge? In the anatomy and physiology of domestic animals, and the plants on which they rely for subsistence, and the qualities of the food in use for the one and the other of these? ought a farmer's son to leave school and assume the management of capital in various forms, without being able to give with his pen and pencil a working plan for building a farm-house, or without the capacity to survey and

plat a piece of ground? without knowledge how to keep clear and infallible accounts of profit and loss on all the capital committed to his charge? without familiarity with the weights and measures, and the monies of different countries with whom we trade, that he may the better understand what he reads of the courses and the results of their agricultural industry? Moreover, let it never be forgotten, that in the very act of pursuing such a course of education, he would acquire a habit of study and a love of books, the value of which is not to be counted in money; for having once imbibed it, the love of knowledge, like a less noble passion, grows by what it feeds upon; and he whom once it seizes, has found a treasure for life. Unlike sunshine friends, in poverty as well as in prosperity, in sickness or solitude—aye, in *old age* even more than in youth, a good book is a good friend, to which he may always have recourse. There it lies, within call, ready to amuse or instruct him. In it he may observe without mingling in the ways of the world, and converse at pleasure with the good and the wise. But how can such systems of education be secured for a country where the tendency of its legislation is to cheapen and degrade labor, to reduce the number of its industrial pursuits, and the capacity to consume the fruits of its agriculture, and of course to impoverish and disperse its inhabitants? No! good readers, be assured that it may be accounted the Rule, not of a beneficent Providence, but of Demon, that makes the success of rival nations depend on the poverty and destitution of those who perform their labor, leading the government to entertain the cursed question, not how large shall be, to the laborer, his portion of the fruits of his toil, but how little shall he have to eat and to wear! In what degree of abject destitution may he and his family be kept, and yet be *kept alive?* Yet such is, as we have abundantly shown you, the condition of the masses, with whom the people of the United States are invited to contend in the great "grain markets of the world"—such, in a word, is the effect of what is called "freedom of trade." In such a struggle to decide, not how much, but how little men shall get in exchange for their labor—in other words, how small shall be their power to consume the good things of this world, who dares expect Education to flourish, the earth to bring forth according to its capacity, or the arts of industry and civilization to advance? No, friends, such a policy opens the road to national ruin and oppression, and ultimately, as sure as the sun sets in the west, must end in national demoralization and barbarism.

In place of the question how education shall be improved, how the arts shall embellish life, and life be more and more a state of enjoyment, elevating mankind, and casting them more and more in the image of God himself; it becomes, under such a malevolent policy, a question of life or death; fraud and force take the place of reason and justice, and the despot usurps what belongs to the people.

Most true, "and pity 'tis 'tis true," a superabundance of cheap land in the west may break the course of national deterioration, while it aids in the work of dispersion; but rely on it, with the nation that sends away its raw materials to be fabricated by the cheap labor of foreign nations, and brought back for consumption, the arts of civilization can receive no enduring impulse, nor can education even flourish as it must do to ensure national aggrandizement. Sooner or later, such countries are destined to realise the condition of England, that great work-shop of the world, to which, under the system of free trade, we must continue to send for our cloth and iron, our glass and our crockery ware. What that condition is you may learn once more from the following, being from the report of an impartial and disinterested English observer:

"LOOK ON THIS PICTURE," "AND ON THIS!"

EXTRAVAGANCE CULINAIRE A LA ALDERMAN.—*The One Hundred Guinea Dish.*—This phenomenon of gastronomy, which has yet never been known in the annals of cookery, was placed before his Royal Highness Prince Albert, the Lord Mayor of York, and the Lord Mayor of London, at the grand civic banquet given in the Guildhall of the city of York last week, containing the following articles, viz.:

5 Turtles' heads, part of green fat, and fins, - -	£34	0	0
24 Capons, (the noix, or nut from the middle of the back, only used,) - -	8	8	0
18 Turkeys, the same, - -	8	12	0
18 Poulardes, the same, -	5	17	0
16 Fowls, the same, - -	2	18	0
40 Woodcocks, the same, -	8	0	0
100 Snipes, the same, - -	5	0	0
3 Doz. Pigeons, the same, -	0	14	0
45 Partridges, the same, -	3	7	6
10 Dozen Larks, whole, -	0	15	0
30 Pheasants, ditto, - -	5	5	0
6 Plovers, ditto, - - -	0	9	0
3 Doz. Quails, - - -	3	0	0
Ortolans, - - -	5	0	0
The garniture, consisting of cocks' combs, truffles, mushrooms, crawfish, olives, American asparagus, croustades, sweetbreads, quenelles, devolaille, and sauce, - -	14	10	0
	£105	5	6

THE following has reference to the counties of Hertfordshire, Bedfordshire, Huntingdonshire, and Cambridgeshire:

"The dwellings of the laboring classes in the above-named counties are, generallly speaking, badly constructed, unhealthy, and over-crowded."

"Mr. Lowe, the clerk to one of the unions in this district, in his report to Mr. Weale on the condition of the agricultural laborer, says: 'If we follow the agricultural laborer into his miserable dwelling, we shall find it consisting of two rooms only. The day room, in addition to the family, contains the cooking utensils, the washing apparatus, agricultural implements, and dirty clothes; the windows broken and stuffed full of rags. In the sleeping apartment the parents and their children, boys and girls, are indiscriminately mixed, and frequently a lodger sleeping in the same and only room; generally no window, the openings in the half-thatched roof admit light, and expose the family to every vicissitude of the weather: the liability of the children, so situated, to contagious maladies, frequently plunges the whole family into the greatest misery. The children are brought up without any regard to decency of behaviour, to habits of foresight or self-restraint; they make indifferent servants; the girls become the mothers of bastards, and return home a burden to their parents or to the parish.'"

Such are the revolting inequalities that must finally mark the condition of every people where the land, the great machine of production, is tied up and monopolised by a luxurious over-ruling aristocracy, whose accumulations depend on *cheapening labor!* Such too must be our doom, if we persist in a policy which presents the alternative of sending abroad for essential manufactures made by the machinery power of England, in exchange for the products of the hand labor of our own country, or of starving home labor, and ruining all who attempt to supply such essential manufactures from our own materials.

> "Ye friends of truth, ye statesmen who survey
> The rich man's joys increase, the poor's decay;
> 'Tis yours to judge how wide the limits stand
> Between a splendid and a happy land!"

For ourselves, let our efforts answer to our creed, which is, that we should tempt, by assurance of adequate return to their labor, the millions of foreigners with whom we would enjoy free trade, to come here, and under our free institutions be elevated and transformed into customers *able lo consume the products of the plough and the spade.* If in this, reader, you agree with us, will you, by increasing its circulation, give animation and speed to the "Plough, the Loom and the Anvil?"

The Plough, the Loom, and the Anvil.

VOL. III. FEBRUARY, 1851. No. VIII.

THE PROSPECT:

AGRICULTURAL, MANUFACTURING, COMMERCIAL AND FINANCIAL,

AT THE OPENING OF THE YEAR 1851.

BY HENRY C. CAREY.

CHAPTER III.

WITH 1835 we enter upon another order of things, one in which the production of *commodities for present use* diminished, and almost the whole attention of the nation was given to the creation of *machines*, intended either for the *future production* of commodities, or for their transportation—new farms, new plantations, new states, and new roads, things that could be neither eaten, drunken, nor worn, while those employed in their creation required to be fed, clothed, and housed.

The compromise bill was now, to a certain extent, becoming operative in stopping the building of mills. But few years were to elapse before protection would cease, and all duties would fall to twenty per cent. The effect of this may be seen in the fact, that the domestic consumption of cotton which had increased so rapidly from 1830 to 1834–5, and had reached in that year, ... 216,000 bales,
was in 1835–6 only..... 236,000
in 1836–7..... 222,000
and in 1837–8..... 246,000

the average of the last two years exceeding the first by only eight per cent., and thus doing little more than keep pace with the growth of population.

The growth of the woollen manufacture was in like manner arrested. Machinery ceased to be in demand, and the demand for iron for that purpose was at an end, while the free importation of rail-road iron precluded the existence of any demand for the construction of furnaces or rolling mills. The mining of coal grew slowly until it reached about 800,000 tons, and there it stopped. In this period the population had grown about ten per cent., and yet the quantity of labour applied to the production of coal, iron, and cloth, was not greater than it had been three years before, whereas, in the previous year, it had grown with immense rapidity.

There being no longer any demand for capital for the building of mills, or the extension of the domestic trade in cloth, the building of furnaces, or rolling mills, the opening of coal mines, or the making of roads to those mills, or furnaces, or mines, it accumulated in bank, unproductive to its owners, awaiting the discovery of some new mode of employment. Soon there arose

a desire for the making of roads. England would furnish iron on credit, and all that was needed, was to feed and clothe the people employed in clearing and grading the land, making the bridges, cars, and locomotives. The extension of roads brought large quantities of new lands within the reach of settlers, and this too at a moment when there existed no demand for labour in the older states. Thenceforward, the people of Virginia, North and South Carolina, and Georgia, were seen flying in masses to the land of promise, Mississippi; Alabama, Louisiana, and Texas, and those of the Northern States, to Indiana, Illinois, and Missouri. The demand for land thus produced filled the treasury, which next disgorged its accumulated millions, to be distributed among the states, and by them applied to the making of more roads. The whole nation presented to view a body of people, utterly neglecting present production, and applying themselves to the construction of new farms and plantations, new roads and canals, machines that could not yield a single bushel of wheat, or a single pound of cotton, to those employed in their creation, and that would not do so under one, two, or three years, and some of which have scarcely done so to the present hour. It was *machine-making* on the largest scale that had yet been seen in any country of the world; but, nevertheless, on a much smaller one than that with which we now are menaced.

Owing to the immigration of foreigners, it is difficult to ascertain the extent to which the population of the older states north of Mason and Dixon's line was affected by this wholesale emigration, but no such difficulties exist in relation to the states south of that line; and I now present the following table, which proves that, from the time of the commencement of this extraordinary movement, which followed so closely the passage of the compromise bill, the older Atlantic States of the south must have remained perfectly stationary. The population is here given in thousands:

	1790.	1800.	1810.	1820.	1830.	1840.
Maryland,.....	319	341	380	407	447	470
Virginia,.....	748	880	974	1065	1211	1239
North Carolina,...	393	478	555	638	737	753
South Carolina,...	249	345	415	502	581	594
	1,709	2,044	2,324	2,612	2,976	3,056
Per centage of increase,.....		20	14	12½	14	3

This vast movement was towards the cotton-growing states, and we may now inquire whether or not the quantity of cotton produced, grew in the ratio of the growth of the population exclusively employed in its production. That it did not, will be seen by the following table:

The crop grown in 1835 had reached.....	1,360,000 bales,
That of 1836 was.....	1,422,000
That of 1837 was.....	1,801,000
While that of 1838 was only.....	1,360,000

We have thus reached the period of extraordinary vibrations in the cotton crop; and it may not be amiss to pause for the purpose of showing the extraordinary extent of those vibrations, and the extraordinary vibration of prices, and then to show what are the causes of those prodigious changes by which the growing of cotton has been rendered mere gambling, the only hope of proper remuneration to any of the growers being that which is based upon the destruction of a portion of the crop of others, by aid of which the supply may be kept down to the demand which the whole body of cotton growers *permit* to exist.

	Crop.	Price.
1823–24	509,000	15 cents.
1824–25	567,000	21
1825–26	716,000	11
1826–27	954,000	9½
1827–28	709,000	10¼
1828–29	866,000	10
1829–30	976,000	10
1830–31	1,038,000	9¼
1831–32	987,000	10
1832–33	1,070,000	11
1833–34	1,205,000	13
1834–35	1,254,000	16½
1835–36	1,360,000	16⅝
1836–37	1,422,000	14
1837–38	1,801,000	10
1838–39	1,360,000	14
1839–40	2,177,000	8
1840–41	1,634,000	10
1841–42	1,683,000	8
1842–43	2,378,000	6
1843–44	2,030,000	8
1844–45	2,394,000	6
1845–46	2,100,000	8
1846–47	1,778,000	10
1847–48	2,347,000	7½
1848–49	2,728,000	6½
1849–50	2,096,000	11⅓
1850–51 estimated,	2,200,000	

It would probably be difficult to find elsewhere in the world so remarkable a degree of regularity in the growth of any crop, as in the first thirteen years of this table, ending with the crop raised in 1835. The march was onward in every case but two, and in one of them the deficiency was trivial.

In the following year the growth of production was small; but in the succeeding one, the new lands having come into operation, it was large, and thereafter we have a succession of extraordinary changes, scarcely to be paralleled in any country, and the result now is, that with all the increase of population and all the wonderful increase of territory appropriated to the growth of cotton, the average crop of the past two years but little exceeds that of the year 1837, showing a most extraordinary decrease in the productiveness of labour applied to the culture of this staple. The reader who desires to understand the cause of the extraordinary variations from year to year, may find it in the fact of the dispersion of its cultivators over so vast a surface. The labour of the man who works alone, is always unproductive, and the amount of returns liable to excessive variations. The savage is at one time enabled to gorge himself to repletion, and at the next he is starving; whereas the civilized man, working in combination with his fellow-men, is enabled to provide against accidents that destroy the crops of those who work alone. If population be abundant, the planter can have aid in harvest, and can pick all the cotton his hands can raise; whereas the solitary occupant of new land is out of the reach of his fellow-men, and cannot pick one-half the crop that could be raised. The man who works in combination with his fellow-men can provide against droughts, or freshets, but he who works alone must take them as they come, and the result is not unfrequently the destruction of half his crop. Of all the evidences of the barbarizing effect of the system of

flying from each other to engage prematurely in the preparation of new lands, which first commenced in 1834, there is none stronger than that which may be found in the gambling character of the cotton trade, consequent upon the variability of the quantity produced, and of the prices which result therefrom.

The effect of increased domestic consumption had begun to show itself in the advanced prices of the crops of 1832 and 1833, under the operation of the tariff of 1828. Soon after the passage of the Compromise Act, commenced the rapid emigration from the older states to the more southern and western ones, and it was the diversion of labour from the raising of commodities on old plantations to the work of creating new ones that caused the great diminution in the subsequent ratio of increase, and the consequent advance of price. From 1829 to 1834, the whole increase of product was rather less than 250,000 bales, while the increase in the home demand was about 100,000 bales, leaving but about 150,000 additional to go abroad, the consequence of which was, that the price in 1834–5 was but little short of double what it had been in 1830–31. *Had either of these causes been wanting, that advance could not have taken place.* Had there been less emigration, there would have been more production. Had there been less protection, there would have been less consumption. In either case there would have been more to export. After this, the growth of export was trivial. From 1829–30 to 1833–34 it had grown regularly from 290,000,000 to 385,000,000 of pounds, or 33 per cent., whereas in the three following years the growth was less than twelve per cent., thus scarcely exceeding the growth of population. So was it with other Southern products, as is here shown:

	Rice. Tierces.	Tobacco. Hhds.
Of the crop of 1835, the export was	112,983	89,442
1836	106,084	100,232
1837	71,048	100,593
1838	93,320	78,995

The small increase in the export of tobacco of the crop of 1836, caused a fall of price from \$91.54 to \$57.82, from which it partially recovered in the following year, and it was not until the remarkably short export of the crop of 1838, that it fully recovered, and then it went up to \$124.47. With the diminished export of rice the price went up to $4\frac{7}{20}$ cents, and thus it was that *diminished production* gave, *for a time*, an appearance of "prosperity"; but as that "prosperity" was attained, necessarily, with diminished power of home consumption, prices fell rapidly when production again increased.

The effect of an increased dependence on foreign markets is remarkably shown in the prices of cotton of this period. The crop of 1835 is reported at 1,360,000 bales; but the domestic consumption being large, the export was only 380,000,000 pounds, and the price was $16\frac{5}{16}$

Thenceforward, the growth of the home market was arrested, and the whole increase was compelled to seek a market abroad. In 1836, the *increase* of crop was 62,000 bales, (or 28,000,000 pounds,) and the increase of export 44,000,000 of pounds, being more than the additional crop, and the price fell to 14

In 1837, the increase of the crop over 1835, was 440,000 bales, or 200,000,000 pounds, and the increased export was 216,000,000 pounds, the consequence of which was a fall to 10

In 1838, the crop was 1,360,000 bales, being the same as in 1835, and yet the export was greater by 33,000,000 pounds, and the price was less by $2\frac{5}{16}$ cents, having been only 14

It is desired particularly to call the attention of the reader to the numerous evidences of "prosperity" existing at this period, resulting from short crops of almost all things, because in similar facts are to be found the chief evidences of present great "prosperity."

The domestic market for cotton diminished as the domestic production of things to be given in exchange for cotton diminished with the progress of applying labour to the creation of new farms and plantations, and new roads by which to reach them.

The export of provisions, which from 1831 to 1835 had fluctuated between eleven and fourteen millions, fell in 1835–6 to $10,914,120
in 1836–7 to 9,588,349
and in 1837-8 to 9,636,650

If we now deduct from this, for the year 1836–7, the quantities of foreign flour and grain consumed, we find the *net* export to have fallen to *five millions*, or far less than half the export of those years in which the manufactures of iron and of cloth had advanced so rapidly, but even this tells but half the story. The domestic consumption of food had fallen greatly, because of the enormous advance of price consequent upon greatly diminished production. In September, 1836, flour in New York was $10.25. In March, 1837 it was $12. In the following September, $9.62; and for the following 16 months it continued above $8; but at the close of 1839, when exhaustion destroyed the means of making roads, it fell with great rapidity. In 1836, pork rose to $18.25. In 1838, it was $18.62; and during the whole period of the road-making mania, it was above $13. Under such circumstances a great diminution of consumption was inevitable, and it is reasonable to believe that the actual quantity of food produced in the Union in those years was materially less than the average of five years before, notwithstanding an augmentation of population equal to one-sixth of the whole.

With diminished production there was a serious diminution in the reward of labour. Money wages ceased to produce the same quantity of food and clothing. Immigration ceased to grow. In 1834, it had reached 65,000. In the following year it was 53,000. In 1836, 65,000; and the average of of the whole period from 1835 to 1841, was only 67,520. Turn-outs and combinations with a view to raise the rates of wages in accordance with the rise in food, became almost universal, and were a necessary consequence of diminished production.

We have here, obviously, no increase in the quantity of the products of the farm or plantation with which to pay for imports. Cotton gained slightly, but tobacco and rice diminished. The export of provisions was almost at an end, for the net amount of three years but little exceeds that of the single year 1830–31. Nevertheless, a few years of increased production, under the tariff of 1828, had so far established the credit of the country that foreign nations gladly took our bonds for future payment, and we were enabled to eat, drink, wear, and use commodities for which we were yet to pay. In 1834, the amount of imports was 86 millions. In 1836, it was 122 millions, in 1836, 151, and in 1837, 113, making about 400 millions in three years, being an excess of about 140 millions, for which we gave certificates of debt bearing interest. Thenceforward, that interest was to be paid, requiring about 8½ millions per annum.

If we now examine the character of this vastly increased amount of imports, we find small increase in the power to consume raw produce, for which we had to pay, the chief increase being in those commodities upon which we could have credit.

	Salt. Bushels.	Sugar. Pounds.	Tea. Pounds.	Coffee. Pounds.	Pig Copper.	Coal. Tons.
1834–5	5,375,000	118,000,000	12,000,000	92,000,000	$693,000	60,000
1835–6	5,068,000	158,000,000	14,000,000	78,000,000	735,000	106,000
1836–7	6,343,000	95,000,000	14,000,000	76,000,000	921,000	150,000
1837–8	7,103,000	142,000,000	12,000,000	93,000,000	838,000	125,000

By comparing this with the statement given on page 17, it will be seen that the average consumption of foreign salt did not exceed that of 1843–4. That of sugar but slightly exceeded that of the same year, being the last in which the tariff of 1828 could be considered fully operative. The average of tea was almost exactly the same as the consumption of that year—while that of coffee was but ten per cent. greater than that of 1832–3, the first in which it was made free of duty, and consequently, as the population had considerably increased, the consumption *per head* had actually diminished. It is obvious, that the power to maintain trade was rapidly diminishing as the power of production diminished.

The effect of this state of things upon the shipping interest may now be examined. Outward freights had declined. The only increase worthy of notice was that of cotton, amounting to between one and two hundred thousand bales, while the export of food had diminished greatly. The inward trade in bulky articles did not keep pace with the growth of population, and immigration was stationary. As a matter of course, the demand for ships was not maintained, and ship building fell off.

The average tonnage built in 1832, 33, and 34, was.....141,000
Nine months of 1835 gave only.....46,000
The year 1836.....113,000
" 1837.....123,000
and in 1838, only.....113,000

Deducting the losses from age and from accident, the amount of tonnage could have been little more than maintained, notwithstanding the growth of population.

The average revenue from imports was in 1832 and 1833, nearly.....$33,000,000
The year 1835 gave 35 millions, and 1836, 50 millions, but 1837 and 1838 gave together only 51 millions, and the average of the whole was but.....34,000,000

of which a large portion was for merchandise unpaid for, and for the value of which we were to pay interest to the extent of probably eight millions of dollars per annum.

It will not now be difficult to determine why it was, that it had been necessary to incur this large amount of indebtedness. The closing of the outlets for capital in the production of coal, iron, cloth, and other articles of manufacture, had *driven* capital to the making of roads and canals, and had *driven* labour to the making of roads and the creation of new farms, and the people who were thus employed in making *machines*, had to be supported while producing none of the commodities required for their support. Production decreased, and with it the power to maintain trade, and the credit of country was first brought in to make up the deficiency, to be next followed by a demand for specie, compelling the banks to place themselves in the gap, and to stop themselves if they would not see the universal ruin of the trading portion of the community, their debtors.

With 1839, the credit of the country disappeared, and the road-making mania was at an end. The banks now stopped payment for the second and last time. The merchants followed, and next came the states, to be followed

by the Union, which was soon driven to send its agents to Europe, inquiring after loans, somewhat after the fashion of *Jeremy Diddler*, in the once popular farce of *Raising the Wind*.

What were the circumstances which led to this melancholy state of things, we may now examine.

For years the whole energies of the nation had been directed to the creation of new farms, and new plantations, and new roads upon which to carry their products—*machine-making*—while neglecting production, and mills and furnaces were closed, as new farms were cleared and new roads were opened. The farms and plantations were now ready to yield their products, and England had not only ceased to sell us cloth and iron on credit, but was clamorous for payment of her claims. As a matter of necessity, therefore, labour now abandoned road-making to seek employment in cultivation, but the market for the products of the farm and the plantation had disappeared.

It has been seen that the cotton crop of 1838 was precisely the same as that of 1835, to wit, 1,360,000 bales, and that the export of the former year was greater by 33,000,000 pounds than that of the latter one—thus showing a great diminution of domestic consumption. The crop raised in 1839 reached 2,177,000 bales, being 817,000 more than that of 1835, and, as the domestic market had diminished, the whole of this large excess, resulting from the transfer of labour from other pursuits to the cultivation of cotton, was compelled to seek a market abroad, and the export of the year reached 743 millions, being 363 millions more than that of 1835. As a natural consequence, the price fell to 8 cents, so that the yield to the planter was less for the larger crop than it had been for the smaller one.

In the following year, 1840–41, the crop was 1,634,000 bales, being 274,000 more than that of 1835, and the export was greater than that of 1835, by 150 millions of pounds, or 330,000 bales of 450 pounds each. The price recovered a little, and the planter obtained for this small crop the same rate as, in 1838, he obtained for the larger one of 1,800,000 bales, to wit, 10 cents.

In the following year, 1841–2, the crop was 1,683,000 bales, being 423,000 more than 1835, and the export was greater by 205 millions of pounds, the equivalent of 460,000 bales of 450 pounds each; and even this small crop failed to command more than 8 cents; and such was the case because the power of consumption at home had been destroyed, in common with the power of producing commodities to exchange for it.

To how great an extent the home consumption of cotton had been diminished to the injury of the planters, will now be seen from the following facts. It is obvious that the quantity worked up in this year must have been less than it had been seven years before, and yet, of this reduced quantity, *we exported more in the form of cloth*. The average export of domestic cottons in the three years ending Sept. 30, 1836, was but $2,330,000, whereas the average of the three years ending Sept. 30, 1842, was $3,200,000, and the direct effect of this was still further to depress the price of cotton cloth in foreign markets, and that of cotton wool at home.

The crop raised in 1842 reached 2,378,000, being a million more than in 1835, and the export was greater by 412 millions of pounds—the necessary consequence of which was a fall to 6 cts.

The condition of the rice and tobacco planters was nearly similar. The exclusive devotion of the attention of the country to the making of farms, plantations, and roads, for a series of years, was every where becoming manifest in an increase of agricultural products, but there was no domestic market. The export of these articles increased, and, with the greater necessity for

seeking foreign markets, prices fell with great rapidity. The export of rice of the crop raised in 1838 was 93,000 tierces, value $2,460,000, and that of tobacco 78,995 hogsheads, the price of which was $124.47 per hogshead. Of the crops raised in the following years, the following are the quantities exported, and their value. Crop of

	Tierces of Rice.	Total Value.	Hogsheads of Tobacco.	Price.
1839	101,660	$1,942,000	119,484	81,05
1840	101,617	2,010,000	147,828	85,09
1841	114,617	1,907,000	158,710	60,11
1842	106,766	1,625,000	93,454	49,23

Here was an increase of about fifteen per cent. in the quantity of rice exported, and a diminution of value amounting to almost one-third, while the 158,710 hogsheads of tobacco raised in 1841 yielded to the growers less than the small export of 1838, because, out of the same gross receipt, he had to pay the cost of transporting to market 80,000 additional hogsheads. The planters were now experiencing the effect of closing the mills, and furnaces, and mines of the country, and driving the whole population of the country into agriculture.

So, too, was it with the farmer. High prices, consequent upon the former abandonment of cultivation, were now followed by the low prices consequent upon want of market at home. Wheat, which in 1838 had commanded $2.50, fell, in 1840, in the Philadelphia market, to $1.00, and in 1841 to 94 cents. In 1842 it rose to $1.12, but in the following year it was but 75 cents. The more bulky corn was in many places scarcely worth the labour of harvesting. Pork, which, in 1838, because of diminished production, sold at $18.62, fell in 1841 to $9, and in 1842 to $8; and, at the close of that year, *prime* could be purchased at $6 per barrel. Hams sold, in July of that year, in New York, at from $4 to $5, and prime beef at $2.50 to $3.50. With the diminution in the production of wool, the price had risen from 35 cents in 1835 to 47½ cents in 1839; but in 1840 it fell to 33 cents, and in 1842 to 28.

There was no demand for labour in manufactures, in coal mining, or for the production of iron, and the average *import* of men from Europe during this period, 1838 to 1842, was but 76,000, while large numbers, disgusted at the total failure to realize their expectations, returned home. The *export* of men was therefore unusually large.

Ten years previously we consumed more, and had more to sell, and were obtaining better prices, and could, therefore, purchase more. Now we had more to sell, because we were consuming less, and prices were so low that the planters and farmers were almost ruined. As a necessary consequence, we could purchase less, as will now be shown.

	Salt. Bushels.	Sugar. Pounds.	Tea. Pounds.	Coffee. Pounds.	Pig Copper. Value.	Coal. Tons.
1838–39	6,061,000	182,000,000	7,800,000	99,000,000	$1,118,000	170,000
1839–40	8,183,000	100,000,000	17,000,000	86,000,000	1,100,000	160,000
1840–41	6,823,000	171,000,000	10,800,000	108,000,000	1,054,000	150,000
1841–42	6,178,000	160,000,000	13,400,000	107,000,000	821,000	130,000
1842–43	5,454,000	68,000,000	12,800,000	86,000,000	369,000	41,000

The domestic manufacture of salt was in a state of extreme depression, yet we consumed less foreign salt than we had done for years before. The domestic production of sugar was ruined, yet, notwithstanding an addition of almost one-fourth to the population, the average import of those latter years was less than it had been eight years previously. Of tea consumed, the ac-

tual quantity had declined. So had that of pig-copper. Coal had slightly increased, but the domestic production of coal had been arrested to the extent of millions of tons.

Such being the state of trade in the bulky articles of import, we may now inquire how it stood in reference to the manufactured articles. The tariff had been changed with a view to promote the domestic consumption of cotton, but, as we have seen, the quantity left for export, after supplying the domestic market, indicates a great *reduction* of the quantity spun at home, notwithstanding the large increase of population, while the export of domestic cloth had increased. Was the deficiency supplied from abroad? The answer may be found in the fact, that the average import of cotton goods, from 1830 to 1834, and from 1835 to 1841, was each almost exactly *twelve* millions, while in the two years, ending June, 1843, the average scarcely exceeded *seven* millions, while the *export* of domestic cottons had increased a million. The *net* import was therefore reduced one-half, and there is good reason to doubt if the weight of cotton, consumed in the Union from 1840 to 1843, was as great as it had been eight years before, notwithstanding the large increase of population. Thus far the compromise bill had not answered the effect. It had deprived the planters of a rapidly growing market, and had substituted nothing in its place.

The domestic production of coal and of iron had for several years remained almost stationary, and the farmers had been deprived of a rapidly growing demand for their products, the consequence of which was, that many of them were scarcely worth carrying to market. It may, however, be said, that they found amends for this in the low price of iron. In reply, it will be enough to state, that the total import of the years from 1835 to 1843 did not average 90,000 tons, while the average of the years 1833 and 1834 was almost 80,000 tons. The consumption of iron had not even kept pace with the growth of population.

The export of provisions grew, because the domestic market had been destroyed, the consequence of which was, that prices were so low that food *could* be sent abroad. To those accustomed to deduce "prosperity" from an examination of statements of exports, I would beg to suggest the consideration of the fact that, when prices are high at home and the farmer is largely remunerated, there is little to go abroad, and prices are then high abroad—little produce paying for much iron; but that, when prices are low at home, the farmer is badly remunerated, and then it is there is much to go abroad, and much produce pays for little iron or cloth. Large exports are *not*, therefore, a certain evidence of "prosperity." If they prove any thing, it is, that the consumption at home is small and that prices are low. There is no more vulgar error than that which infers the certain existence of "prosperity" from large exports, but it is an error common to the whole English politico-economical school. The average export of the three years, during which the whole community had been given to the creation of new farms and new roads, *machine-making*, had been under ten millions, but

in 1839 it rose to	$14,147,779
in 1840, to	17,196,102
and in 1841 it was	16,902,876

In the following year the wheat crop would appear to have been short, for the price rose, and the total export of breadstuffs and provisions was only 11,204,123

Whenever the export is small we obtain high prices. Whenever it is large we obtain low ones; and yet eminent financiers, abroad and at home, see in large quantities exported undoubted evidence of general prosperity.

The import of men had ceased to grow. The import of the raw ma-

terials of manufacture, and of raw produce of all kinds, was stationary. The power to pay for foreign manufactures was rapidly disappearing. The quantity of cotton and tobacco to be exported became more and more unsteady, fluctuating from one year to the next to the extent of forty per cent. In this state of things there existed little reason for increasing our shipping, and accordingly we find the average tonnage built in these years to have been only 120,000 tons, against an average, in 1832 and 1833, of about 150,000, notwithstanding the vast growth of population.

The revenue, too, fell off. From 1835 to 1841, *notwithstanding a great excess of the early years, similar to that we now witness*, the average was but $17,170,000 against $24,000,000 from 1830 to 1834; but, in the two years ending June, 1843, it fell to $16,400,000, and now it was that the government was seen to be begging loans in the cities of Europe, and every where repulsed.

The compromise bill had totally failed to answer the expectations of those for whose gratification it had been passed. It had diminished the consumption of cotton, and the planter was being ruined by the low prices consequent upon that diminution. It had diminished the home consumption of tobacco and of rice, and prices were ruinously low. It had diminished the market for grain, and pork, and beef, and the farmer could consume no cotton. It had ruined the iron master, the coal miner, and the maker of cloth, and had driven hundreds of thousands to raise food, to the destruction of the farmer, whose former customers were now become rivals. It had diminished the building of ships, and the shipwright could procure neither food nor clothing. It had diminished the import of men, and those who remained abroad consumed one pound of cotton, whereas, if here and fully employed, they would have consumed a dozen pounds.

The representative of the West had looked to the building up of the states in the great western valley by means of extensive rail roads, but the states were ruined, and the dread of heavy taxes drove emigrants to other states possessing neither roads nor debts. He had looked to a great foreign market for the products of his state, but the really great market had disappeared, and the products of the earth were being abandoned on the ground.

The capitalist who had invested his fortune in the making of roads or canals, calculating upon a large increase in the quantity of commodities to be transported, now found that the heavy products of the earth were so nearly swallowed up in the cost of transportation that there was little to be returned, and that the roads and the canals could make no dividends.

The reward of labour was to be increased, but it had diminished. The consumption of iron was to grow, but it had declined. Shipping was to increase, but the new ships did little more than supply the place of those worn out or lost. The states were to become strong in wealth and credit, but they were bankrupt. The revenue was to increase, but it had fallen so low that the government was begging in the market for loans. The nation was to become strong, but it had become weak. It was to command the respect and gratitude of England for granting almost perfect freedom of trade, yet England could find in her vocabulary no words of vituperation sufficiently strong for the bankrupt debtor, who owed her two hundred millions of dollars—no word sufficient to express her feeling of contempt for the nation that, in obedience to her will, had closed its mills, its mines, and its furnaces, and had rendered itself dependent upon her for nearly all its cloth and its iron, giving in exchange therefor cotton, tobacco, rice, and provisions of all kinds, at a price so low that the surplus left, after paying the cost of cultivation, was so trivial as to render it unable to pay the annual twelve millions of dollars required for discharging the interest of the debt thus contracted.

We are told that protection is "a war upon the labour and capital" of the world, yet at no period from the formation of the constitution had the reward of labour and capital been so large as between the years 1830 and 1835. The first effect of the compromise bill was to diminish the demand for capital, and the second was to cause it to be applied to the construction of roads, canals, farms, and plantations, which ruined their owners; and the heaviest effects were felt at the period when protection was least. The first effect upon labour was to diminish the demand for it; and the second to raise the price of food to such a point, that turbulence and disorganization reigned throughout our cities. The third and last effect was, to drive into agriculture so large an amount of capital and labour that both became, in the closing years of the compromise, so unproductive as to yield little to be applied to the purchase of food, and still less to that of clothing.

Of all the measures adopted from the foundation of the constitution to the present hour, there is none that has been productive of so much injury to the Union as the compromise tariff of 1833. But for that, the present excitement between the North and the South would never have arisen, for the mania for emigration and for road-making would have had no existence. The domestic market for the products of the farm and the plantation, then increasing at a rate so rapid, with steady growth of price, would have gone on increasing in almost geometrical ratio, and the present hour would witness a degree of prosperity and harmony, of union and strength, we never yet have seen, and *possibly* may never see, for the seeds of disunion have been widely sown, both at the North and the South, and they are all of them the fruit of that bill.

So long as the growth of the domestic demand for cotton was such as materially to affect the increase in the quantity for which the planter was compelled to seek a distant market, so long did the price continue to rise, *and it was not until the quantity that had to seek a market abroad increased more rapidly than the crop increased, thus proving a diminution of domestic consumption, that the planter was compelled to employ himself in devising measures for diminishing production;* and with each such step the tendency to the exhaustion of the land, and the abandonment of the old States, and to a high estimation of the advantages resulting from the existence of negro slavery, has increased, until it has brought about a state of feeling that now threatens the existence of the Union, and that will continue to threaten it so long as the policy of the country tends to close the mines, the furnaces, and the mills—thus diminishing the market for the products of the farm and the plantation, while increasing the necessity for applying labour to the cultivation of farms and plantations. Prior to the passage of the compromise bill, political anti-slavery had no existence. Prior to that date, pro-slavery had no existence. To that law, and its centrifugal, impoverishing, and weakening tendencies, both are due; and should a dissolution of the Union result from the present anti-slavery agitation, those who shall have to record that event will find its causes in the fact that the Congress which passed that law would seem to have forgotten the existence of "a higher law" than even the constitution itself—a law which teaches that the will of the majority must rule. A small minority dictated the passage of the compromise, and the abandonment of the then existing system of national policy, and it is to that violation of a law which is the basis upon which the constitution rests, that all our subsequent troubles are due.

It is common to ascribe the impoverishment of the country to the action of the banks, which are looked upon as having been the great cause of mischief; but future historians, looking at the question with a dispassionate eye, will decide that the banks were far "more sinned against than sinning." The

action of the compromise bill closed the outlets for capital, and caused an accumulation of deposits in the banks, which, as a matter of course, desired to profit by their use. New markets for the capital thus *rendered* surplus were opened in the South and West, and *speculation* grew precisely as *production* fell off, as it invariably does; and, when the day of settlement came, the banks were compelled to stand between the government and the people, and bear the odium of a bankruptcy that would never have taken place had the action of the government been of a character tending to increase the legitimate demand for labour and capital and to increase the productive power of the nation.

CHAPTER IV.

THE TARIFF OF 1842.

THE planters, as we have seen, were nearly ruined. The price of cotton had fallen to eight cents in 1839–40, and it had been the same in 1841–2, while the prospect, soon realized, was that it would fall to a still lower point for the crop then in the ground. It did fall to six cents. Previously to this period, it had never been below 9¼ cents. The first time at which it fell so low as even ten cents, was in the year 1823, just prior to the passage of the tariff of 1824. With the exception of the period of great speculation in 1824 and 1825, it never rose above that point until the rapid growth of the domestic market, after the passage of the tariff of 1828, produced a diminution of the necessity for dependence on foreign markets. It then rose to 11, 13, and even 16½ cents; but, with the destruction of the domestic market, prices fell again, until, at length, the crop raised in the last year of the compromise act would command, as has been seen, but six cents.

Tobacco was worth but fifty dollars a hogshead. Rice was equally low. Wheat, flour, corn, pork, hams, beef, every thing indeed that could be produced on the farm or the plantation, had fallen so low that the planter and the farmer were both advancing rapidly on the road to ruin.

Such was the state of things when the tariff of 1842 was passed; and that it was passed, was due to the fact, that the farmers and planters had found the compromise bill to have been a failure. It promised "free-trade," but *it had destroyed trade*, by destroying the power to produce commodities in which to trade.

The tariff of 1842 was passed on the 30th August, and it came at once, so far as the wording of the law was concerned, into operation; but time was needed to render it really operative. Every interest in the country was almost, even where not quite, in a state of ruin. Factories were closed, mines were abandoned, and furnaces were out of blast, and the work of resuscitation, even so far as to restore the productive power to the extent at which it had existed years before, was not the work of a moment, and still longer time was required for the opening of new mines, or the building of new mills and furnaces, for any extension of production. The first year of the new tariff was, therefore, to be regarded as one of the children of the compromise, and the fiscal year 1843–4 as the first-born of the new system.

From 1843 to 1847, the domestic production of iron grew from little more than 200,000 tons to 800,000 tons; that of coal, from 1,100,000 tons to more than three millions; and that of lead, from 473,000 to nearly 800,000 pigs. The domestic consumption of cotton grew from less than 300,000 to

little short of 600,000 bales, and that of wool from fifty or fifty-five to eighty millions of pounds, while every other department of manufacture made unexampled progress.

If we take the raw material required for those and other manufactures that grew up naturally as the production of food, and iron, and cotton, and woollen cloth extended, and estimate its value as compared with that of the commodities produced, we shall find that it would be a very low estimate to place at one hundred and twenty millions of dollars the product of the labour employed in the work; and for every dollar of this immense amount were the manufacturers customers to the farmer and planter. The labourers expended their wages in food, clothing, and shelter for themselves and their families, and these latter things are but the representatives of the food and other raw materials consumed by the men employed in their production.

If, next, we add thereto the vast amount of capital expended by the labourers and their employers, both of them rapidly accumulating, in the creation of the mills, the furnaces, the rolling mills, the smaller factories of all kinds, and the machine-shops, and in the opening of mines, we shall find that the *additional* market made for the products of the farm and the plantation could not be estimated below a hundred and fifty millions of dollars, and that even that was a very low estimate of the value of the labour thus employed.

With such a diversion of labour from agriculture, we should have reason, were there any truth in the theories of the modern English school of political economy, to find a diminished product of the labour applied to the work of cultivation. Was it so? On the contrary, at no period has there been so rapid an increase in the power to produce and to export such products.

The crop of cotton from 1839 to 1842 had averaged....	1,700,000 bales.
That of 1843–4 was	2,030,000
" 1844–5.....	2,394,000
" 1845–6.....	2,100,000

giving an average of almost 2,200,000 bales.

The average export of tobacco had been for four years..	130,000 hhds.
That of 1843–4 was.....	163,042
" 1844–5	147,168
" 1845–6	147,998

giving an average of above 150,000 hhds.

The average export of rice had been for four years.....	105,000 tierces.
That of 1843–4 was.....	134,715
" 1844–5	118,621
" 1845–6	124,007

The average export of provisions had been for four years under	$16,000,000
That of 1843–4 was.....	17,970,000
" 1844–5.....	16,743,421
" 1845–6.....	27,701,121

The increase in the productive power applied to the cultivation of food had been immense, as will be seen on an examination of the following returns, furnished by the census of 1840 and the Patent Office Report of 1847.

	Wheat.	Barley.	Oats.	Rye.	Buckwh't.	Ind. Corn.	Totals.
1840, . . .	84,823,000	4,161,000	123,071,000	18,645,000	7,291,000	377,531,000	615,522,000
1847, . . .	114,245,000	5,649,000	167,867,000	29,222,000	11,673,000	539,350,000	867,826,000
Increase, .	29,422,000	1,488,000	44,796,000	10,577,000	4,382,000	161,819,000	252,304,000

The deliveries of wool on the New York canals, and at Pittsburg, in 1842, were only ..... 4,823,881 pounds,
In 1843 they were 5,713,289
1844 6,798,769
1845 13,267,609
1846 12,269,537
and in the following year they reached the enormous amount of 16,325,987
having increased *about three hundred and forty per cent.* in the short period of five years! With a growth so rapid it was difficult to create mills with sufficient rapidity to work it up, for, but a short time previously, all those connected with the woollen manufacture had been nearly ruined, and hence it is that we find the price to have fallen to 29¼ cents in 1845, and 24½ cents in 1846; and yet, in almost every case in which any portion of the crop was exported, it was returned—the domestic market being better than any foreign one, to a greater extent than the return freight. At what prices, then, could this wool have sold, had the domestic market not existed?

It would seem clear that the labour applied to cultivation had not only *not diminished* with the application of labour to the conversion of the vast amount of raw materials into cloth, iron, fuel, and other commodities required for the use of man, but that it had *increased in a ratio that was absolutely wonderful* —whereas, in the previous period, the productiveness of agricultural labour had greatly diminished as the mills, and furnaces, and mines were closed.

Prices, however, were low, and that such should be the case was an inevitable result of a system that had for years tended to drive the whole labour of the country into the creation of new farms, new plantations, and new roads upon which to carry their products. The road-makers had been compelled to turn farmers, and the market for their products had now again to be created, and this work required time. The average crop of cotton in three years exceeded, by almost half a million of bales, that of the four last years of the compromise tariff, and the annual growth of domestic consumption was but about 100,000 bales. There were, consequently, 400,000 additional bales to be exported, and hence the fall in price. Had the domestic market not grown, there would have been 500,000 to be exported, *and the price would have been two cents per pound lower.* It was the tariff of 1842 that saved the planter from actual ruin.

The price of food was low. It could not be otherwise. For years the domestic market had been crushed, and for years the labour of the country had been driven to cultivation, and the effect was now becoming visible in the vast increase of products, but the market for them had to be created. Wheat sold in Philadelphia, in 1843, at an average price of 75 cents; in 1844, at 89 cents: in 1845 (the crop was unusually large), at 86 cents; but in 1846, it rose to $1.04, being within 29 cents as high as the average of the year of the famine in Europe. Consumption was rapidly overtaking production.

Prices were low, but what would they have been with all this vast production, but for the creation of this vast domestic market? At what price would cotton have sold in 1846, but for the immense domestic consumption? At what price would the food have sold, but for the consumption in mills, and furnaces, and mines? At what price would this wool have sold, had the farmers been compelled to export it?

Wool was low. It could not be otherwise. For years the woollen mills had been closed, and more time was needed to create the new mills to absorb the new supply of wool, than to raise the wool.

Iron was high. It could not be otherwise. For years we had closed our

furnaces that we might make farms and roads. Those made, the production of food and cotton, of tobacco and rice, grew rapidly; and then arose a demand for iron, and we had to pay the price fixed by those who had the monopoly of the supply—the people of England. High prices produced competition, and the domestic product rose to 800,000 tons, with a certainty that another year or two would enable the domestic manufacturer to supply the domestic market, after which, prices would have fallen so low as to forbid importation, and the farmer would have had good prices for his food and have bought his iron at low ones.

The prices of iron and of cloth were temporarily higher, but how much higher would they not have been but for the domestic production? At what price could we have purchased a million of tons of iron in 1846? At what price could we have purchased 300,000 additional bales of cotton goods, or two millions of tons of coal, or twenty millions of pounds of woollen cloths? The answer must be, that they could not have been purchased at all, and that the increased power of consumption resulted from the increased power of production due to the beneficial working of the act of 1842.

The farmer and the planter had for years been made the sport of a legislation tending to increase the competition among themselves to sell, and to diminish the competition among others to buy, and they were now paying the forfeit, by selling cheap and buying dear. With every hour, however, the course of things was changing. Increased production of cloth was diminishing rapidly the price of cloth, and woollens which sold in 1842 at $2.75, sold in 1846 at $2.25, the consequence of which was, that the importation of woollen cloths ceased to increase. The price of iron fell, because of increased domestic competition, and the import fell, from an average of 106,000 tons in 1843 and 1844, to 82,000 tons in 1846—a year in which there was probably more consumed in the country than in any one before or since. The correction was being made. The market was rapidly being made on the land for all the products of the land.

The demand for labour raised its price, and men came by hundreds of thousands to sell their labour. For years, immigration had been stationary at an average of 76,000
In the year 1844–5, it rose to 102,000
1845–6 was 147,000
1846–7 239,742

Here was a new and large demand for the products of the earth. All these immigrants required to be fed and clothed, for at least a year, before they could raise a grain of wheat or a blade of grass. At $100 each, here was an *additional* market for the farmers and planters of the Union, amounting to sixteen millions of dollars.

Under such circumstances we could consume largely of foreign products, notwithstanding the low prices at which we were still compelled to furnish our products in exchange, because of the unnatural disproportion between the consumers and producers of the land—the fruit of the compromise tariff.

	Salt. Bushels.	Sugar. Pounds.	Coffee. Pounds.	Tea. Pounds.	Pig Copper. Value.	Coal. Tons.
1841–2 1842–3 average,	6,848,000	114,000,000	107,000,000	13,000,000	$595,000	98,000
1843–4	8,543,000	182,000,000	149,000,000	13,000,000	625,000	87,000
1844–5	6,423,000	114,000,000	94,000,000	17,100,000	738,000	86,000
1845–6	5,242,000	108,000,000	124,000,000	16,800,000	1,251,000	156,000
1846–7	8,969,000	232,000,000	152,000,000	14,200,000	1,490,000	148,000

	Iron. Tons.	Cottons. Value.	Woollens. Value.	Flaxen Goods. Value.	Silks and other French Merchandise.
1841–2 1842–3 average,	81,050	$7,184,000	$6,300,000	$2,900,000	$14,500,000
1843–4	101,720	13,641,000	9,475,000	4,492,000	17,952,000
1844–5	110,576	13,863,000	10,666,000	4,923,000	22,069,000
1845–6	82,390	13,500,000	10,089,000	4,972,000	21,600,000
1846–7	96,350	16,071,000	10,570,000	5,152,000	24,900,000

We were becoming, from day to day, better customers to the world, and thus enabling the world to be better customers to us; and all this we were doing, notwithstanding the low prices we were forced to accept for all our products, because of the many years we had been driving the labour of the country into agriculture; and notwithstanding the necessity for applying, annually, the enormous sum of twelve millions of dollars to the payment of interest upon the debt incurred during the unhappy period of the compromise tariff. Had that tariff never existed, the home market would have been then absorbing far more than a million of bales of cotton, and the planter would have been receiving more for a single bale than he obtained for three, and the farmer, no longer compelled to look abroad for a market for his food, would have been seen consuming thrice the iron, and thrice the sugar, and thrice the tea and coffee, and thrice the silk, that he did consume, making a market for the products of other climes than our own, and a market for the surplus labour of Europe to the extent of a million of men in a single year. What, then, would have been the power of the nation, and what the condition of its people?

Increased exports of commodities and increased imports of men, of raw products and of manufactured commodities, produced a demand for shipping, and our tonnage grew with a rapidity never before known, as will now be shown. The average of ship building in the year 1841–2 and 1842–3 was 114,000 tons,

In 1843–4 it rose to	140,000
1844–5, it was	146,000
1845–6	188,000
1846–7 it reached	246,000

being a larger amount than had ever before been known.

The public revenue grew with a like growth. In the years 1841–2 and 1842–3, the receipts into the Treasury for duties averaged	$16,400,000
In 1843–4 they were	26,183,000
1844–5	27,528,000
1845–6	26,712,000
1846–7	23,747,000

During a considerable portion of this last year, imports were suspended because of the approaching change in the revenue system. It must now be remembered that, during this period, there was paid up a very large amount of *back* interest on the debt that had accumulated during the dark period of the compromise, and that the current interest required at least twelve millions of dollars that would otherwise have been applied to the purchase of commodities upon which duties would have been collected; and further, that at least eight or ten millions of dollars of debt were absorbed; all tending to cause the receipts for revenue to stand at a lower point than they would otherwise have done, to the extent of at least four millions of dollars per annum. Had those causes not existed, the customs revenue would have exceeded 30 millions of dollars, being about a dollar and a half per head, and fifty per cent. more than the average from 1835 to 1842. The annals of the world may be challenged for the production of any such resuscitation as that which took

place in this country under the "benign" influence of the tariff of 1842. At the date of its passage there was no demand for labor, and the laborer could consume little food or clothing—no demand for cotton, wool, coal, iron, or cloth, and the producers of these commodities were fast becoming bankrupt. Production was small and commerce seemed almost approaching its end. Roads and canals were unproductive. Corporations and States were bankrupt, and the Union, *after having discharged its debt by the aid of the revenue received under the tariff of* 1828, had gone in debt so heavily under the compromise, that its agent, after a long visit to Europe, was compelled to return without having nogociated even a single dollar of the loan it desired to contract. Go where he might, he was met with vituperation of the foulest kind; while the newspapers of England teemed with abuse, compared with which, that which has been bestowed on the thrice bankrupt Austria or Spain, might be deemed highly complimentary; yet it is moderate, compared with that which yet awaits us at the next revulsion.

At the close of this brief period of real "prosperity," how great was the change. Labor was everywhere in demand. Planters had large crops, and the domestic market was growing with a rapidity that promised better prices. The produce of the farm was in demand, and prices had risen. The consumption of coal, iron, wool, and cotton and woollen cloth, was immense and rapidly increasing, while prices were falling because of the rapidly improving character of the machinery of production. Production of every kind was immense, and commerce, internal and external, was growing with unexampled rapidity. Shipping was in demand, and its quantity was being augmented at a rate never before known. Roads and canals were productive. Corporations had been resuscitated, and States had recommenced payment, and the credit of the Union was so high that the same persons who had vilified the people and the government of the Union in 1842, were now anxious to secure their custom on almost any terms—having become as fawning now as before they had been insolent. The "shop-keeping" instinct of the people of Great Britain had led them to trample on those they had ruined, and the same instinct, uniformly reprobated by Adam Smith, now led them to "bend the supple knee" to their best customers. A change so great and so discreditable to a people calling themselves a great nation has rarely been seen, and if other evidence was needed of the deleterious effect upon national character, resulting from converting a whole people into "a nation of shopkeepers," it might here be found. Were Adam Smith alive, he would find in it a realization of his worst prediction as to the results of the system he denounced, but which has been maintained and enlarged even to the present hour.

How to enlarge Vegetables.—A vast increase of food may be obtained by managing judiciously, and systematically carrying out for a time, the principles of increase. Take, for instance, a pea; plant it in very rich ground; allow it to bear, the first year, say half-a-dozen pods only; remove all others, save the largest single pea of these: sow it the next year, and retain of the produce three pods only; sow the largest of the following year, and retain one pod; again select the largest, and next year the sort will, by this time, have trebled its size and weight. Ever afterwards sow the largest seed, and, by these means, you will get peas, or any thing else, of a bulk of which we have at present no conception. —*Boston Cultivator.*

FURTHER REFLECTIONS ON MARYLAND HUSBANDRY.

As has already been said, the first question with a practical man on the tabular view of Maryland Husbandry, presented in our last, is—*will this pay?* No rational man, engaged in agriculture can, or should wish to divest himself, of the obligation to know the result of his year's operations, in whatever pursuits they may have been employed. This obligation becomes more respectable and binding in proportion as his employment becomes more enlarged and complicated, by being spread as it is in farming, over a great variety of objects; and the more responsible too, when it involves the welfare and happiness and comfort, of many other persons and beings, besides his own.

To determine this question of profit or loss, however, it is necessary to possess some knowledge of accounts, and some reflection and sagacity to distinguish the proper elements to be brought into the calculation.

Here in this view of the *average* fruits of agricultural industry throughout the State, it is seen that on the supposition that the four Eastern shore counties not heard from, to wit: Kent, Queen Anne's, Caroline and Dorset, equal in products the other four, to wit: Talbot, Cecil, Somerset and Worcester—(and we presume that is as much as the last four would admit;) in that case we have according to the estimate of gentlemen selected for their sound impartial judgment, an average for the whole Eastern shore of Maryland, of 9½ bushels of wheat per acre; 24 of Indian corn; 10 of rye and 14 of oats. On the same principle of calculation the Western shore, embracing Calvert and Anne Arundel, (not heard from) would give 11 of wheat; 28 of Indian corn; 9 of rye (allowing 9 to be the product where no quantity is stated,) and 20 of oats; or for the whole state, 10 bushels of wheat to the acre; 26 of corn; 9 of rye and 17 of oats. This calculation of aggregate averages, from the figures before us, is not pretended to be *fractionally* accurate, but is essentially so. With apparently more exactness, Major Jones of Delaware, established the following results for his school district, number 58, New Castle county, in that State. Number of farms, 23; total of acres, 8173; average size of farms, 355 acres; from lots of 4, 5 and 7, up to 750 acres. Average yield per acre:

	In 1845.	In 1847.
Wheat, - -	14½	13 4-5
Corn, - -	23½	30 5-8
Oats, - -	20 11-12	8 5-7

These averages would probably somewhat overgo the general one for the State. The author of a recent scientific work, on "*Agricultural Physiology, Animal and Vegetable,*" confirms the impression we have always entertained, that the average products of England have been placed too high. He states the average growth of wheat per acre in England, to be 21 bushels, and the lowest average for a county to be in Dorsetshire, 16 bushels; of barley in all England, 32¼ bushels; lowest in Devonshire, 24 bushels; of oats, the average for all England he puts at 35½; and for Glocestershire, the lowest, 20 bushels per acre; the average produce of turnips per acre at 10 tons. This is probably nearer the truth than higher estimates lately given. The fact is that land may be so easily carried to its maximum power for yielding wheat, the strength of land going into the straw and causing the wheat to lodge, that we sometimes think it would be better for farmers in Maryland to yield the market for wheat to

cheaper and more distant lands, and to aim more themselves at the manufacture of vegetables and meat and wool; which would leave more of the refuse of its products to replenish the land; but this is a question worthy of further thought and discussion;—who will aid us in its elucidation? Come gentlemen! do'nt be content to receive and absorb all the light you can get, and reflect none. That's neither just nor generous.

This statement of Major Jones, above referred to, will be found in the Patent Office Report for 1847, page 368, and is thus particularly referred to, as an example of zeal and pains-taking, to assist in a laudable object, which may well be commended for imitation to every tiller of the soil and real friend of agriculture, throughout the country. In the selection of such a farmer to answer the inquiries of the government, that indefatigable promoter of agricultural improvements, Doctor J. W. Thomson, to whom they were sent, (and whose agency in improving the agriculture of Delaware is beyond computation,) showed, that if he had not leisure to collect the facts himself, he well knew the man who could and *would*.

We will not return from this digression, if such it may be called, without further quotations from Major Jones' report. He says—"I sent out the blanks which were furnished from the office at Washington. They have *never been returned* from those I sent them to, in distant parts of the State. Here I must say one word for the benefit of editors who profess to publish prices current; that I was astonished at the lameness of their reports. Out of *fourteen* different papers which I subscribe to and *pay for*—among which are four professing agriculture, the rest made up of political items of both parties—only one of them had the price of potatoes! Every one of those papers had the *price of whiskey!* And here I will call attention of all editors of papers, from the little country paper, up to the great "Union" at Washington, to a matter of great importance to farmers: Let them once in every year give us the amounts of our *exports of bread stuffs*, designating to what country each article is sent. Give us the Treasury Report of domestic exports. It is not enough to tell us that we *can furnish* the world with bread stuffs; we want to know *who is willing and able to pay for them*."

After the experience the Major has had in making reports to the government, and to state societies, by their own appointment, some of which have been emasculated and some decapitated, might he not impute this omission even to give the amount of our exports of bread stuffs to nations from which we so heavily *import bread stuffs* (in the shape of woollen and iron and other manufactures,) to the fear, on the part of editors, of being suspected even of furnishing the elements of *party* political calculations; though of the deepest interest to *tillers of the soil above all classes?* As far as personal experience can go, no man ought to have a quicker apprehension than he, how fearful farmers seem to be, of being even suspected, of looking into the bearing of the revenue laws of the country on their particular industry and interests.

But to return more immediately to our subject;—with less deliberation, and perhaps less judgment too, than was exercised in forming the estimates in our last, some will be prompt to pronounce them under the mark, and, peradventure, to charge us for confiding in them, with a readiness to despond ourselves, and a proneness to discourage others. But what possible motive can the most suspicious or malevolent assign for the one or the other? *Cui bono?* to all such suggestions, suffice it to ask, who is the best friend to the sentinel on the watch tower—the one who gives him an opiate, or otherwise beguiles him from his duty, leading him to cry "all's well" when all is not well; or he who quickens his vigi-

lance by reminding him of his responsibility, and warning him of unperceived danger? True, these estimates *may be* under, but are they not as apt to be over the mark? Is it likely that so many gentlemen, practical agriculturists, would all err on the same side? True too, in many cases, the estimate has been formed for a single election district; but is not that as likely to have been one yielding more, as it is to have been one yielding less than an average of the county? On the contrary, any one looking at the best authenticated estimates from states generally deemed to possess nearly their virgin fertility, as Ohio and others, will be surprised to see how near these quantities approach them. Taking these returns then as merchants render their accounts, with an E. E.,—Errors Excepted—let us proceed with the inquiry—*does this pay?* In other words, in this account of Maryland Husbandry, (made up of the best materials to be had, and with full and fair notice,) what is the gain or the loss, in the *aggregate*, on agricultural capital and labor, employed in one of the oldest states in the Union—one most advantageously situated for the means of transportation to market, penetrated and ramified in all its sections by navigable rivers, that carry natural canals to every man's granary door, and by rail-roads through all its upper counties?

Well, with this account of average products before us, the first inquiry is,—*the cost of production?* And the matter to be decided in the outset is *how is the account to be made up*, and particularly the *labor account*, where slave labor is employed? It can hardly be assumed as possible, that any one conducting his farm with slave labor will for a moment maintain, that because they are his own property, therefore their labor costs him nothing! To decide that point, we will suppose him to own 20 negroes, and let him answer one interrogatory. If under any circumstances you were about to sell, and to embark in other business, at what would you value your 20 negroes—suppose we say 12 working hands and 8 children, and superannuated? Would you take less than $6000—say $300 round? And if sold for $6000, would you not expect to get at least 6 per cent., lawful interest of Maryland, or $360 annually? and therefore, is it not fair to charge your crops with that amount to begin with? But that is not all, by a long shot. If you are in earnest in the investigation—if you are not afraid to look the truth in the face—you will charge your crops with the clothing and the keep of your slaves, including medicine and attendance. Moreover, you will charge them with what it would cost you to insure their lives, so as to place the capital in them, on a footing of stability and net income, with the money capital at which you value them, and for less than which you would not sell them. Against this there is no alternative. Yours is a manufactory, or a mercantile speculation—you may take your choice. If but a manufactory of provisions and breadstuffs, as it is in fact, then the manufactured articles it turns out, are your wheat, corn, rye, oats, meat, &c., as sold in the market; and the machinery employed, or capital embarked, (on which you are paying interest as assuredly as if you borrowed it from the Farmers' Bank,) are your land, Negroes, Horses, Oxen, Wagons, Ploughs, Harrows, Seed, Grain, and interest on land, not only the land actually cultivated in the particular crop, but any other employed exclusively for *the maintenance of the force* used in the manufactory, &c. Your crops should be debited too with your own time and labor, unless you are content to admit yourself a drone in the hive, whose labor is to be set at 0, instead of being the active boss over all.

What man of sense or ambition would choose to be unemployed, if he could? "He," says the great moralist, "whose life has passed without a

contest, and who can boast neither success nor merit, can survey himself only as a useless filler of existence; and if he is content with his own character, must owe his satisfaction to insensibility." No! with every man who can appreciate the pleasures of industry, time is money. For ourselves, every moment is employed under the double impulse of necessity, and the hope of doing some good. To spread these very lines before the reader, since what we said on the subject one month since, we have been obliged to earn and *pay away* an average of $10 a day, and that happens from month to month, in the cost and expenses of publication, before one dollar remains for our own labor and support; so that we claim to allege, that while we preach industry, and demand for every Farmer the right to charge for his own time, we *practice what we preach!*

To return to our subject. Every Farmer, not only when he comes to his estate and begins life, but at the commencement of every year, should take an account in full detail, of all *his stock in trade.* He should assess the value of his land, and make an inventory and assessment of horses, sheep, cattle, hogs, grain, and implements. If he likes not to rely on his own impartiality and judgment, let him call in the aid of a judicious neighbor and friend, and reciprocate the office with him. Let him value his slaves, cost of keeping them, taxes paid, &c., and charge accordingly against his crops. If his land deteriorates, let him put that down as so much loss upon the year's operations, and so much addition to the cost of his crops, or things sold. The effect of such deterioration is the same as if he who lives on the interest of his money in bank had, besides that, intrenched on the principal. On the other hand, if his estate, by his good management, has *appreciated,* and been rendered more productive, he has *added that much to his stock in trade,* and is entitled to credit accordingly. So is he fairly entitled to credit for every pound of butter and pint of milk, and even egg and potato consumed in his family. It's no answer to say, that he could do without these things, and therefore has not profited by their consumption. They are no more than reasonable indulgence, and waste should be avoided under all circumstances. But he would be surprised at the amount, were he only to keep for a week an account of all that is thus consumed, and calculate what he would have to pay for them if bought in the market. It's worse than ridiculous to say, and idleness is father to the thought, that it's beneath any man's attention to take account of these things. The Farmer that keeps no accounts, if he depends on his farm for a living, is not entitled to a night of sound rest. He sleeps over a volcano, that may or may not explode, and blow him sky high.

It is in fact in the value of these very items of home consumption, as we opine, that most men in the country are *saved from ruin.* For although they might not be able to sell for much, the milk and the cabbages, the potatoes and the butter, their families consume, let them calculate what they *would cost* if they had to buy, and they can then realize, not only the amount of their savings and enjoyments, but how many little things are in this way turned to account, and how much is gained *when the products of the land are thus consumed on the land,* the consumer being placed by *the side of the producer.* Here it is that he may see illustrated the truth of our doctrine, as to the vast value of *domestic* over *foreign* commerce, and the value of genuine free trade among ourselves. Here he will see, where there is no cost of transportation, (the consumer being on the spot,) how little he feels the cost of supporting his family and his slaves, in the enjoyment of comforts that render their condition a Paradise, as compared with that of the *serf* labor of Europe, who generally

live on black rye bread, called pumpernicle; or that of English laborers, who have to support large families on 7 shillings a week. Read the indisputable evidence of General Webb, an extensive and observant traveller over a large portion of Europe; as to the condition of those against whom the Farmers of the United States have to contend, in the "great grain markets of the world," to see who shall sell lowest to the men employed in making the iron and cloth, and a thousand other things, to the amount of $60,000,000, imported by us from England alone during last year:

[*From the New-York Courier and Enquirer, Dec. 5, 1850.*]

"We have seen slavery as it exists in our Southern States, and we have examined into and witnessed the condition of the laboring classes in Great Britain, and on the Continent, and we have not the slightest hesitation in saying, that notwithstanding the occasional cases of hardship, there exists not on the face of God's earth, except in our Northern States, a laboring population so well off, so happy and contented, or a population so well cared for in health, sickness, and old age, as the slave population of the United States."

In some of the estimates of Maryland counties, bordering on Pennsylvania, the reference is to free labor. The reader must decide which is the cheaper of the two, remembering that the free laborer finds his own clothing and medical attendance. Let us see then what in other states, where the cost of labor is about the same as in Frederick county, is considered to be the cost per acre, or per bushel, of producing corn and wheat.

In the Patent Office Report for 1847, the answers of gentlemen designated, it may be presumed, to the Commissioner of Patents, as practical men of integrity and judgment in their states, by members of Congress, we find the cost put down in

	Of Wheat per bushel.	*Corn.*	*Interest charged on Land valued per acre at*
New Hampshire,	$2 02	$2 00	$25 00
Connecticut,	—	36 5-10	50 00
New-York,	63	29	20 00
Michigan,	67 5-15	16	10 00
"	36	11 3-5	15 00
Ohio,	50	20	20 00

After all, the result of sincere solicitude, and of reflection on the facts we have submitted is, that the Farmers of Maryland and Virginia, as a class, have good reason to pride themselves even upon holding their own, as they have done, against the fearful odds of starving labor in Europe, and that which works on our own cheaper virgin lands in the west—lands which are in a fair way to be all bestowed on any one who will accept them—lands which the old Atlantic states have made accessible, and brought into competition with themselves, by the construction of canals and rail-roads, for the sake of building up enormous sea-board cities, filled with mere exchangers, instead of fostering a policy that would protect manufacturing labor, and so fill their own interior with thriving manufacturing villages. Suppose, after paying all the cost of producing their crops, on the principles of cultivation here suggested, the Farmer had, out of the net residue, to buy all for the maintenance of his family, as the merchant, the manufacturer, and other towns people have to do? Suppose the Farmer had to buy the use of a house, and to pay cash for all the vegetables, fruit, milk, butter, eggs, potatoes, the juicy hams, and fat mutton and poultry, that make up daily the fare of his family and his operatives? There is not one in a hundred who would not fall, as merchants do, into a state of hopeless bankruptcy. On this point, we

find, in a paper of the day, the following statement, said to be made with care, and based on good authority:

"It is asserted that but one eminent merchant (and his death is still recent and lamented) has ever continued in active business in the city of New-York, to the close of a long life, without undergoing bankruptcy, or a suspension of payments, in some one of the various crises through which the country has necessarily passed.

"It is also asserted, by reliable authority, from records kept during periods of twenty to forty years, that of every hundred persons who commence business in Boston, ninety-five, at least, die poor; that of the same number in New-York, not two ultimately acquire wealth, after passing through the intermediate process of bankruptcy; while in Philadelphia, the proportion is still smaller."

What then is the key to unlock the mystery and show us how it is that Farmers *do* manage to keep *their* heads above water, some of them contriving, with rare sagacity of management, to augment their original stock in trade? This, reader, is the important problem which it behooves you to solve; and here we believe *is* the true solution. It is because the Farmer *does* find on the spot customers for a large portion of what he makes. Without any cost of transportation, or expense of middle men, he pays the great item of expense, labor, on the ground, by the sustenance he affords (in fact sells) to the men and the animals that perform it. There are between them, at their joint cost, no middle men, such as wagoners, factors, ship owners, sailors, porters and manufacturers, to be supported out of his produce, as is the case in all commerce where the products of the land are sold to distant customers; and here, friends, you may at once see the superior value of all domestic trade; of all commerce carried on upon your farms;—by far the largest portion of all the commerce to which labor gives rise. Here, says the laborer—whether bond or free, it is all the same thing as to that—here is my labor, to be deposited in your fields and garden; and here, says the land holder, are my equivalents in exchange for your labor—a house over your head, a fire to warm and a bed to rest and recruit your weary limbs—here are your milk and your butter, your vegetables and your bread and meat, for all of which in town you would have to pay the cash. If I buy your labor nominally cheaper than you could sell it in town, so you buy of me, and of my land, the comforts you get in exchange for it, much cheaper than you could buy the same amount of comfort in town. Thus it is that when consumers are placed by the side of producers, each is a Savings' Bank to the other, and what remains unconsumed of the products of each will be all the greater for their proximity to each other, and will go to make up the elements of more distant commerce, but after all that residue is a mere flea bite (always diminishing in the ratio of the distance between them,) in comparison with that genuine and legitimate free trade which is carried on among each other at home. Yes, difficult as the Farmer may think it, and no doubt finds it, to make both ends meet, it is this large proportion of the products of the land which he exchanges for labor, and which is consumed upon the land, and this *alone* which enables him to do it. Well! is not what is good for individuals, or families, good for a nation, made up, as all nations are, of individuals and families? and may not the policy always be pronounced improvident and deleterious which leads or forces a people to trade with foreign nations, in commodities for which they have the materials for internal and domestic traffic?

It is every where seen that the more various the pursuits of the people, and the closer they settle down together, the greater is the saving of time and expense (just as in a family) in exchanging the products of their capital and industry, and of course the more time is saved for production, and the greater the means of consumption, accumulation and enjoyment.

Protection to American labor and the diversified employment of it on materials here in the bosom of our own country, would cause the nation to thrive, just as the farmer thrives and his estate improves, as the market approaches his door, and yet more when he can find on the land itself the best market for the products of the land.

Reader, you have only to peruse that great work, "THE PAST, THE PRESENT AND THE FUTURE," and the clouds in which other writers have enveloped these subjects, for want of clear views of their own, will be dissipated as you proceed with it, and like the mists of the morning, pass away before the rising sun, bringing into full and clear relief, things before obscure and invisible.

Sometimes it is intimated that we deal too much in the political economy of agriculture; but we consider that we are never more *practical*, than when we are impressing upon the American landholder, to struggle for a policy of government which shall diversify and encourage American industry; enabling the people to exchange the products of their industry with the least expense. But while we do that, and felicitate the Maryland farmer on holding his own, by hard work and close shaving; there is one point to which we would fain *nail and forever rivet his attention;* and that is, that he take care to *keep up until he can augment the value of his stock in trade!* Let nothing ever tempt him to trench upon his principal. In other words, let nothing tempt him even for a year, to diminish the aggregate productiveness of his lands. The goose that is cut open to take out one golden egg, can never be healed. Here is the point of danger to be guarded with sleepless vigilance, for you can no more maintain the fertility of land, from which more is annually carried off, than is annually restored; than a cow can continue the flow of her milk, when tied up and deprived of food and water. Between the cow and the farm, we might pursue the analogy if we had time, but we have not—except to say in general terms of them both—that the nearer the customers, the more valuable become both the farm and the cow, and hence our undertaking this new work to show how beneficial to the *Plough* is the *Loom* and the *Anvil!*

When, in these hasty reflections on the state of agriculture in Maryland, we suggested a doubt whether they might not in most cases yield the production of wheat as a staple, to their competitors in the Western States, for whom the sea board States have provided rail-roads and canals; we were not aware, that it had already been done in New-York, to the extent stated by Professor Johnston. But our suggestion was founded in an ignorance of the low condition to which even the Gennesse valley, and the newer regions west of it, have been already reduced, according to the Professor, and to Mr. Newton, in whose judgment from better opportunities to learn, we should have yet higher confidence. Be it then repeated, we are not free from doubt, whether the Maryland and Virginia farmer might not possibly substitute, more extensively than he is doing, Indian corn and grass, and root crops, making of his farm, more of a cattle and meat manufactory; and thus consuming on the land the products of the land; in lieu of wheat, which carries off every thing, leaving nothing but its straw, and that to be used in the most careless and wasteful manner. It may be a question whether they could continue the cultivation of wheat were it not for their cheap transportation, some four or five cents a bushels for hundreds of miles.

In the table published in our January number, and in some statements not there given, there are some peculiar facts and features on which we may hereafter make some observations.

ON THE CULTIVATION OF TOBACCO.

Some friends in the West lately requested that we would give something for new beginners on *the cultivation of Tobacco.* The sorts of tobacco cultivated in the different states are essentially different in quality and in the uses to which they are applied. Perhaps no plant is more susceptible of the influences of various soils and climates. The rich strong fat tobacco of Virginia is made into chewing tobacco; that in Maryland, we believe, principally into snuff and segars. It is said there are $10,000 of segars smoked daily in New-York. How much of Virginia tobacco would be consumed in England the Lord only knows, were it not that she raises by an import duty on it some $16,000,000 or $20,000,000 a year, as much as we pay annually for our military establishments. But how much more of it yet would be demanded, if Virginia would unite, in the establishment of a policy, that would attract millions of tobacco chewers and smokers and snuffers, not only to come to our country, where their better pay and the lower price of the article would enable them to consume five pounds where now they consume one, but a policy that, when they did arrive, would detain them in the various manufactories of the sea board states, instead of driving those who do come to the West, to become the makers of tobacco! Then all the mountain pastures and water-powers of Virginia would be filled with consumers of her low-land tobacco. God intended it should be so when he filled her valleys with coal and iron, and spread out pastures in her mountains for millions of pounds of wool. But how perversely every thing works, when man, with his "many inventions" and gross self-conceit, departs from the policy which nature indicates? Thus we see Virginia pluming herself on what she calls "free trade," under which she is importing from England all the iron for her rail-roads, while her iron men are being ruined.

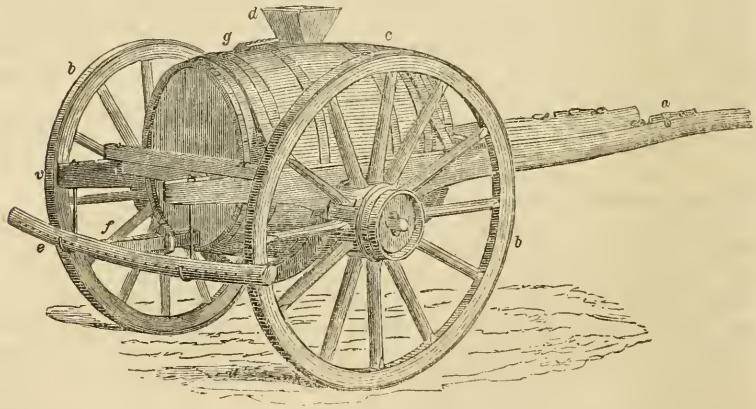
Connecticut again produces a dark brown thin silky leaf tobacco, fit for the wrappers of segars, much resembling the Cuba. Tobacco raised in this country from Cuba seed, the first year, is not much inferior in Florida, particularly, to Cuba tobacco.

We have it not in our power to give an essay adapted exactly to all climates and all kinds of tobacco. The one at hand which is most minute, and most likely to answer in most points, the demand of our western friends, is the following, from that good Planter, and still better man, the late Peter Minor, of Virginia. Much more recently a prize essay, and a capital one no doubt, was written by W. W. W. Bowie, Esq., of Prince George's county, whose pen throws light on whatever it touches; but that is not within our reach.

It may not be without its interest, as an item of agricultural history, to state, that the editor of the "Plough, the Loom and the Anvil," obtained these notes from the writer *thirty-one years ago,* in the course of a ride on horseback, for the good of his liver and lungs, (both being disordered,) up the valley of Virginia to the warm, hot, white, salt, red and sweet springs of that state. Returning by the way of Rockfish gap, on reaching Albemarle, he was most kindly welcomed and entertained by old Mr. Divers, near Charlottesville, where he found a letter waiting to intercept him, from his most valued and lamented friend, Peter Minor, not then personally known to him. From Mr. Divers' he was accompanied by his bachelor brother to Monticello, just as the pilgrims go to the shrine of Mecca. Mr. Jefferson was going next day to his estate in Bedford, but

was very civil, and as always highly entertaining and instructive, but not very exemplary in his dieting or drinking on that occasion; for we well remember, that in following his recommendation and example in *eating millet*, (then the one in his constant succession of hobbies,) and in *mixing our* wine too, at his instance, the consequence was what might have been expected—an intestine commotion in the abdominal regions, that might have proved yet more seriously inconvenient, had it not been for the charming hospitality with which we were that night received and treated at Ridgeway by Mr. Minor, and every member of his family. It was there that we first saw Mrs. Minor's brother, Frank Gilmer, so often mentioned in Kennedy's charming memoirs of W. Wirt, whose first wife was also a sister of F. G. How lamentable that an exemplary life, and a radiant intellect such as Gilmer's should have been extinguished when it had just risen high enough to give every hope of a cloudless and splendid meridian! One agricultural or horticultural fact we remember to have heard from Mr. Jefferson. We were speaking of the influence of soils, climates, and manures on plants, when he said that a large income of some one whom he knew in Europe, from a *Port wine* estate, had been ruined by the application to it of fresh, unsuitable stable manure.

But we are forgetting our friends in the west, who want to be hearing about tobacco; so we begin by expressing the persuasion, that failure of plants, a very common complaint, is one that ought not to find a place in any planter's vocabulary. Might it not be obviated by a little *extra* trouble in various ways? As, for instance, by watering the beds, as the streets of a city are watered, distributing a well prepared liquid manure, by a cart of this sort:



And again, would it not ensure more sensible heat, and an earlier supply of plants, were they to give a *black* hue, to the surface of the bed, by the use of charcoal, coal dust, black sand or otherwise?

If the substance employed to give a black surface to the bed, should be charcoal; that substance it is well known, possesses the power of absorbing moisture and of imbibing the different gases that possess fertilizing powers, particularly ammonia; both contributing to the growth of the young plant. Black sand or earth would attract and imbibe much more heat than a lighter colored surface. Sir Humphrey Davy found that a rich *black* mould, containing one-fourth of vegetable matter had its temperature increased from 65° to 88° by exposure to sunshine, whilst a chalk soil was heated to only 69° under the same treatment. Coal

ashes when spread over beds of garden crops, invariably cause the crops to appear several days before others of the same sort not covered; it being, says Mr. M'Intosh, "a well known fact that dark colored bodies absorb heat more readily, and in larger proportion, than those of a lighter hue; but they part with it more readily and hence light colored soils are more backward in spring and retain their verdure longer in autumn." When, as often happens, the white boy and his black play-fellow go bathing together in a hot sunshine, the former comes home to his mother at night with his shoulders and back all covered with *blisters*, filled with a coagulable lymph, while the negro boy, protected by the black rete mucosum of his skin, provided by nature for the tropical climate from which his ancestors came, escapes all inconvenience from the sun and laughs at his more delicate companion. What is the reason of the difference? Not that the sun is reflected from his black skin! quite the contrary. It *absorbs* the radiant heat and converts it into sensible heat. The effect of burning the earth, described by Mr. Minor, is the expulsion of the moisture the soil would otherwise contain, and this too shows the necessity of these beds being thoroughly drained.

Besides the precautions we have suggested, we doubt not there is yet much to be done by chemistry for improving the quality of tobacco, as to time and height of *topping*, the manure to be applied and the curing of the plant.

We could wish the Agricultural Professor at the Virginia University, would turn over in his mind all these rude suggestions, and let us have the honor of publishing *pro bono publico*, the result of his investigations and experiments.

Planters should *think* a little more than they do, study a little more the philosophy of their business, and make experiments for which they have so wide a field, and so many materials and so much temptation. Our pages are always open for inquiry on any subject and for the communication of results.

What we give now, is sufficient for the present. In our next, or in ample time, we will proceed with Mr. Minor's essay.

NOTES ON THE CULTIVATION AND MANAGEMENT OF TOBACCO,

From the plant bed to the prize—according to the most approved practices in Albemarle and the adjacent counties in Virginia.

1st. OF THE CHOICE OF LAND FOR THE PLANT-BEDS, AND MODE OF PREPARING IT.

A rich virgin loam with a slight mixture of sand is ascertained to be the best soil for raising tobacco plants. Such spots are indicated by the growth of alder and hazle bushes in bottoms and on the margin of small streams, and if the situation has the command of water for irrigation it is on that account to be preferred—the spot being selected, the first operation is to burn it with a strong fire. For this purpose the growth of every kind is cut off, (not grubbed up) and the whole surface raked very clean. The burning should be done before Christmas, or as soon after as the weather will permit—and if done thus early it cannot be well too heavy, even bringing the soil to a hard cake. The wonderful fertility imparted to soil by fire, has of late years been clearly proved and developed by various experiments in this and other countries, but judging from long established practice, we suppose it is a fact that has been long known to tobacco planters; that this fertility is imparted by the fire, and no ways dependent upon the ashes left by the process is clearly proved from the fact, that the same results will ensue if the ashes are swept off entirely clean. Or take another piece of ground of equal quality, cover it with as much or more ashes, and prepare it in every respect similar except burning, and plants cannot be raised in it. Hence the necessity and propriety of regular and uniform burning, the want of which is always manifested by a diminutive yellow and sickly growth of plants in those spots not sufficiently acted on by the fire.

After the ground becomes cool from burning, the whole surface should be swept with

a coarse twig broom to take out the coals. In this operation some of the ashes will be removed, but that is of no consequence; it should then be broken up about two inches deep with grubbing hoes, in which operation and in repeated choppings afterwards with hilling hoes, all roots will be cut and finally got out with a fine iron tooth rake which will leave ground in proper order to receive the seed.

The most approved time for sowing is about the first of February, the beds previously prepared being suffered to lie and mellow by the frost and snows to that time. But it will do very well to burn and sow after that time, as late as the first of March, taking care not to have the heat so great. The quantity of seed is as much as can be taken up in a common table spoon* for 100 square yards, and that in proportion. This quantity of seed should be mixed with about one gallon of clean ashes, and half that quantity of plaster of Paris, and the whole well incorporated, and then strewed uniformly over the bed at two operations, crossing at right angles to ensure regularity. Cabbage seed for early planting, Tomatoe, Celery, and Lettuce seed may be sowed in small quantities with the Tobacco seed, without material injury to the growth of the plants. After sowing the seed the ground is immediately trodden over closely with the feet, and covered thick with naked brush. If the frost is severe from this time it is common to take off the brush some time in the month of March, before the plants appear, and tread the bed again, and at the same time give the ground a slight dressing of manure. The dung of fowls of all sorts, is sought after for this purpose, which being beaten, is sifted over the bed through a coarse basket or riddle. The brush is then restored, and not finally removed until the leaves of the plants are half an inch in diameter; when the dressing of manure is again applied, taking care to wait the approach of rain for that purpose. Any grass or weeds that may have sprung up in the meantime are carefully picked out. In dry seasons, if the situation admits of it, the bed must be irrigated by training a small stream of water around the edge of it. If not it should be watered every evening with a common watering pot, or pine bushes dipped in water and shook over the bed until sufficient moisture is obtained.

Under a careful observance of this management, the plants according as the seasons have been favorable or not, will be fit to transplant from the 15th of May to the 10th of June. A planter thinks himself lucky if he can get his crop pitched by the tenth of June. After that, the soasons are uncertain from the heat of the weather, and the chances of success for a crop prevarious; though it has been known to succeed when planted in the middle of July.

NIGHT SOIL—ITS VALUE.

The best of all manures is the one which in our country is almost universally wasted. In Belgium, where agriculture is carried to great productiveness, they "order things differently." There, the estimate is, by *nice* calculation, that it is worth $10 for every individual, man, woman and child. We traverse sea and land, send to Africa and South America to bring elements of fertility which at home we throw away on every farm in the country. What an immense amount wasted in our cities! It must be the most valuable, containing the elements of all kinds of food consumed by man, and in returning these to the soil, we return the identical constituents which former crops and animals, had taken from the land. Night soil contains the phosphate of lime, which is indispensable to the growth of animals' bones and to the nutriment of plants, and which is not supplied from the atmosphere, like carbonic acid and ammonia. All fluid and solid excretions should be preserved by mixing them with burnt clay, saw dust, ashes, peat or wood charcoal, &c.

We have a great deal to learn, and alas, much more to practice, that we have learned.

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* This quantity of plant bed is generally considered under good circumstances as sufficient to set ten thousand hills in good time. But the prudent planter taking into consideration the casualties of fly, drought, &c., will do well to make a larger allowance. We know of no certain remedy or antidote against the fly which destroy the early plants.

ON THE CULTIVATION OF THE APPLE

As there is no neglect in matters of domestic comfort and economy, more glaring, nor one, perhaps, more characteristic of our country, than the failure of farmers in many of the states to provide an abundance of *good fruit*, at least for their own table—nor one that we have, for thirty years, more pointedly exposed; there would seem to be a propriety in occasionally publishing *good directions for planting and managing fruit trees.* What follows as respects the apple, seems to be of that character, but there, as every where, the thought recurs, that various and good fruit, is rarely or never to be found in any abundance, for general enjoyment, except where population is thick, and that cannot happen, *where all are engaged at one pursuit.* There must be *diversity and good returns* to labor. There are probably, 20,000 masons, at least in New-York, within a circle of three or four miles; but how long could they remain there, to buy the farmer's good fruit and melons, berries, milk and potatoes, were the other pursuits to decline and those who follow them to disappear from the city, leaving the masons to themselves? So should we have, throughout our own country, all who are now employed in Europe in fabricating for our use and consumption, iron from ore, cloth from wool, glass from sand and lime, pottery from clay, and so with a thousand other things, whereof the raw materials so much abound with us. No nation possessing such materials, can ever wisely or economically go abroad for the manufactures produced from them. God intended international commerce to be supported by the interchange between different countries, of the things he gave to one and not to the other—but where he gave the raw materials of a manufacture He intended in His benevolence, to make it a matter of controversy between nations, not which should give to labor the least reward, but by which should labor be best rewarded and most elevated, so that to that point labor should be most strongly attracted, and the arts advance fastest under the strongest stimulus. Any other supposition is an impious impeachment of the goodness of Providence.

To return to our subject, he who wants to see and to enjoy fruits, aye, and flowers too: in their greatest variety and excellence, must turn his face and go to the bleak North, and he will reach what he seeks only when he comes into the cold, dreary, sandy and rocky lands of Massachusetts, where every trade is carried on, and where men have had the sagacity to avail themselves of steam and machinery, to *multiply a thousand times their own natural capabilities*—there the first thought of every farmer, is to provide himself an *abundant supply of good, wholesome, delicious fruit;* both as a matter of economy and as a matter of luxury; well knowing that, for any surplus he may have, a market is at hand, in the demand created by the presence of industrious thriving classes, who are otherwise employed, and have neither land nor fruit.

The apple amongst fruits, appears to hold the same rank as Wheat among cerealia, or Potatoes among roots; it is not a luxury only; from habit it has become almost one of the necessaries of life, and so deserves our attention. The Apple is recorded to have been first introduced into England by Leonard Mascall, in the reign of Henry the VIII. The only fruits indigenous to Britain, were, we are told, the Acorn, the Sloe, the Hazel Nut, and the Crab; and although cultivation and skill have produced an almost unlimited number of varieties of them, yet the seeds or kernels of our best Apples, when sown, naturally reproduce the original parent fruit—the Crab or Wilding, as the Filbert also does the common Hazel Nut.

Botany however, teaches us that we can obtain apples from the blossoms of any sorts we choose to inoculate together, with almost as much certainty as to the result as in crossing different races of cattle.

Apples are propagated by seed. The kernels sown in February or March, in mild weather, the earlier the better, on clear light ground. They should be sown in beds three or four feet wide, covering them about an inch deep with earth. They will be fit to transplant the following Michaelmas, or spring, and in about five or six years fruit may be expected.

Apples may, however, be raised from seed in the short space of four years by the following mode.—Sow the kernels in separate pots in November, and place them in a green-house during winter; they will vegetate in February; at Midsummer the plants should be moved into a seed-bed, in rows about fourteen inches apart. In the autumn of the following year, transplant them into a nursery, at the distance of six feet; every succeeding winter prune away all small lateral shoots, leaving the stronger laterals to the bottom, and so disposing the branches, that the leaves of the upper shoots may not shade those beneath.

Grafting I prefer to be done while the stock is young, and in the nursery, as the graft being put into the stock, about one foot from the earth, becomes in fact the stem of the future tree, and is not liable to be broken off by high winds or split by a heavy crop of fruit, as is sometimes the case in cleft-grafting, when the stock is older. Splice-grafting on small trees is also more certain; not one graft in twenty ought to fail; and if the land is kept, as it should be, in high condition, they will shoot from two to five feet, and in two, or at most in three years, be fit for the orchard. I exhibit a young tree grafted the 10th of April last, now five feet high, and three-quarters of an inch in circumference. Grafts may be sent any distance, by the simple plan of inserting the lower end in a Potatoe. In 1836 I brought home Apple and Crab grafts from the farthest settled part of Canada. I was two months travelling home: they came perfectly fresh, and have since borne fruit. The Potatoes I exhibit to-day are descended from those I brought home with the grafts stuck in them eight years since.

Budding is an operation that may be performed even earlier than splice-grafting, and has the advantage of not materially injuring the stock should it fail, which if done in proper season, (August or September,) will scarcely be the case to the amount of one per cent. There appears to exist an analogy in animal and vegetable life in many things; thus, the natural decay of individual families, not only of man but of the inferior animals, has its parallel in the history of the Apple. There are some kinds of old fruit that cannot be kept long in a healthy state—they strike readily from the graft, flourish for a few years, and then begin to canker, and die back one year what they grew the preceding. Of these I will mention the Russet, Orange Pippin, Orange Pearmain, and Golden Pippin; and there are symptoms of decline in young trees grafted with that very generally useful Apple the Bromley. I have tried most of these old sorts on the most vigorous young stocks, both by budding and grafting, but the seeds of degeneracy and decay are transmitted from the parent tree, so that premature decline and disappointment is the consequence. This predisposition to decay also appears to invite that pest to nurseries and orchards, the Aphis or American Blight; the best remedy I know of is simply to cut out the infected part with a keen knife, and afterwards wash the stem or bough with strong soap-suds applied with a brush and well rubbed in.

The site of an orchard should be near the dwelling house, on good quality of soil, and rich deep land, with a subsoil either naturally dry or that can be made so by draining. Soil on which the Elm grows freely is, we may be sure, fit for the growth of the Apple or Pear. No foot-path or other road should cross the orchard, and an impenetrable fence of hedge and ditch, or better still, a strong stone wall should surround it. Previous to planting, the distances between the trees should be fixed on, and the whole field laid out in right-angled lines, a straight stake being placed at each intersection. Thus only can the trees be planted in lines so as to be perfectly straight when viewed in any direction; and while the planting is proceeding, a person whose eye can be depended on should superintend it from various parts of the field, previous to the earth being filled in—as a single mistake of a few inches will throw all out of square. By this method the greatest number of trees can be planted in a given space, so as to afford to each an equal to occupy with roots and branches, besides the advantage of passing with carts or wagons to carry hay or collect fruit; or if the field be arable, the plough can thus cross in any direction, so as to leave but a narrow portion untilled.

As regards distance, some persons who have written on planting orchards recommend the trees to stand twenty-two yards from each other; but from my own observation and experience, I think half that distance (that is, 33 feet) will, on the average of land and seasons, produce more fruit, and the trees will come earlier into bearing. An orchard on pasture land (and there are few arable in Gloucestershire) should be appropriated to the specific purpose of a fruit manufactory, the under crop of Grass being quite a secon-

dary consideration. The best orchard I know, as a constant bearer, is one where the branches of the trees meet each other in every direction, and shade the whole ground. I account for this by considering that there are no intervals for the keen winds of spring to find a current through, so as to check the sap; and, provided the orchard is exposed to the full influence of the sun, and on the south side, I do not think it can be too much sheltered from every other quarter.

A probable reason for earlier bearing in an orchard thickly planted would be that the trees have less space for their roots to extend: and as a tree seldom produces much new wood and fruit at the same time, it seems a reasonable conclusion, that as there is not much surplus sap to form new shoots, blossom-buds will be formed instead; and as nurserymen tell us, that if by any means we can once cause a tree to produce fruit, it will after continue the habit, and as we do not require Apple trees for timber, a diameter of 33 feet is large enough for the head of a fruit tree

Having determined to plant an orchard, the first thing to be prepared ready for transplanting is a heap of compost formed of old turf, slaked lime, and farm yard manure; these should be well turned and mixed together during the spring and summer preceding, so as to form a mass of material resembling the mole-casts on deep good land—indeed, could a sufficient quantity of this be obtained, it would at once form the material required. The holes should be dug in the winter, so as to expose the soil to the action of the frost. If the subsoil be clay, the earth should be cast in three divisions round the hole. so as to place separately the turf, the second quality of soil, and the subsoil clay—the latter to be spread or carted off. The second quality should then be returned into the holes, the turf chopped fine and levelled on it, and it will then be fit for the reception of the roots of the tree—about a wheelbarrowful of the compost to each tree being within reach of the planters.

Far too little pains are generally taken in the important operation of planting. To do this well, three persons should always be employed—a lad to hold the tree upright; a man kneeling, to manage the roots, spreading them with the ends inclining a little upward, while the third levels the prepared soil underneath them, so that when loosed they may be nearly horizontal, and radiating even on all sides from the stem, like the spokes of a wheel; more soil should then be levelled amongst them with the hand, while the tree is slightly shaken, taking care that the crown of the roots shall not be below the level of the surface of the ground. The roots will at length be covered with mould, and the man who had the care of them, best knowing their position, should tread the mould over them. The treading should be firmly not violently done—the heel of the shoe first coming in contact with the soil on the outside the hole, and the toe will then gradually press the earth to the centre of the roots. This is very different to the usual method of throwing in coarse clods, and stamping on them so as to form a puddle of clay impenetrable to water, as I have often seen done in planting. I am aware that trees so planted will, if the roots are good and the stock healthy after a struggle for a year or two, overcome these impediments, but by following the rules I have laid down, there will be scarcely a check to its growth.

The planting being completed, the tree should be defended from cattle, high winds, and other casualties, by two stakes one on each side, with two cross bars at top and two at bottom: a piece of tar twine passing across them and round the tree prevents the wind from moving it out of place, until the roots are well established. On pasture land it will be necessary to have upright paling nailed to the bars, reaching from the root to the head, which, if of a proper height (that is about six feet), is thus securely protected. I prefer February as the time for planting. Mild, serene weather, if possible, is to be chosen, and all the necessary operations should be going on at the same time, under the personal superintendence of the master. One trusty person should prune the injured parts of the tree, and cut off all broken roots, and such as are inclined to become tap or perpendicular ones, forming at the same time with his knife a fair balance in the proportion of root and top, the former rather preponderating, and the tree should pass at once out of his hands into those of the three planters; these should be followed the same day by the persons employed to fence the trees (the materials for which should be ready prepared) so as to leave all finished and secure at night. Should this be neglected, and a wet windy night succeed, injury will be done that cannot be remedied.

The trees, if purchased of a nurseryman, should be selected in September, and marked with the buyer's name on parchment shreds. A liberal price being paid, few nurserymen would object to their stock being picked out, and the best plants of the season are thus security with more certainty as to sorts. The day for planting being fixed, an order for the trees to be ready one day before will bring them fresh to hand, and the neglect of this produces more failure than any other cause. If the stocks are reared at home, they should be taken up and replanted the same day. To give a list of fruits would be an endless task, and produce, I think, little practical good—the same Apple in different localities bearing frequently different names.

TUSSAC GRASS—FROM THE FALKLAND ISLANDS.

Should this meet the eyes of any of our officers of the navy, or sea captains, we are sure it will be sufficient to state that experiments go to create the belief that this tussac grass of the Falkland Islands would probably prove an acquisition of immense value to our country. We will undertake to make the best disposition of any seed committed to us. We wish editors of papers would have the goodness to copy this, the better to insure its being seen.—*Ed. P. L. & A.*

The great reviver of Southern Agriculture, Col. John Taylor, of Caroline, was thirty-two years ago as our gallant and accomplished friend, Andrew Stevenson, is now, *President of the Agricultural Society of Virginia*, of which so many have come, and departed the way they came, without, as we fear, any great general and visible signs of agricultural amelioration—going to create an apprehension that those at the plough in the Old Dominion want customers for what they do make, and so well know how to make, rather than societies to teach them an art, about which no people in the Union have had better instructors from Taylor to Ruffin, and which no people in the Union better understand.

Col. Taylor, in an address to the society, which we published just thirty-two years ago, on Artificial Grasses, after stating the difficulties with clover, timothy and red top, thus highly commends the "*high-land meadow Oat.*" We should be pleased to be informed by his worthy son and successor in his fondness for agriculture, Mr. William Taylor, whom we have the pleasure to recognise among our most esteemed patrons, what has been the fate of this grass—whether it has continued to maintain its claims, and to extend itself in Southern cultivation?

The best grass which I have tried, in many respects, is one commonly called "the high land meadow oat." I have had no means of ascertaining whether it is a species of rye grass, or of the avena pratenris, or neither, nor whence it derived the appellation "Peruvian," by which I have heard it distinguished. With its qualities I am better acquainted, having carefully observed them for many years. It ripens as early as the red clover, and is easily made into fine hay, if cut in proper time. Its earliness is of vast importance in our climate. Thence it happens, that it produces heavy spring crops, like red clover, as it commonly perfects its growth before a drought occurs. It is the hardiest grass I ever saw, and bears drought and frost, heat and cold, much better than any I have tried. It keeps possession of the land in spite of severe grazing. It flourishes best on soils suitable for red clover, but it will live on and improve lands whereon red clover will perish. It furnishes better grazing early in the spring, late in the fall, in droughts and in winter, than any grass known to me. Ripening with the red clover, it is peculiarly fitted for being sown with it, because it greatly facilitates its conversion into hay, and retains possession of the ground for years after the clover has disappeared. Alone, cut before the seed ripens, its hay is as nutritive and pleasant to stocks of all kinds as any I have ever used; and it will yield both seed and tolerably good hay at one cutting, as it ripens soonest at top. Mixed with favorite grasses of grazing animals, it is partially rejected, but eaten as they fall. Alone, it is greedily fed upon. After being cut or grazed, if left to grow, it rises anew, almost with the rapidity of lucerne, with a vigour but little diminished. Fifteen years' experience has not enabled me to decide as to its capacity for improving the soil, because the small quantity of seed first obtained, by confining experiments to small patches, long concealed its qualities; and the large lots first sown have remained too flourishing to require manure, and too valuable to be ploughed up. It produces, (after it has come to perfection, in doing which it is one year slower than red clover,) ungrazed and uncut, a warmer and more lasting cover than the clover, which has recently induced me to mix and sow it with wheat on a large scale, for the end of improving the soil, in which anticipation I have yet discerned no cause for apprehension. For this purpose, it possesses one recommendation beyond clover. It does not grow and spread so rapidly in the fall or spring, as to injure the crop of wheat with which it is sown, as is sometimes the case with clover. Upon the whole, whatever doubt remains as to its fertilizing power, the conclusions that it eminently possesses the qualities for last-

ing, grazing, and making high land hay, may, I think, be confided in. But it does not, so far as my trials have extended, succeed in lands originally wet, however well they are drained.

P. S.—We are reminded here, and think it well, to preserve the following remarks of a traveller on the grasses of *Texas*. A grass suited to the pastures of our Southern States is a desideratum—and would it not be easy and very well worth while to try there this *Musquite* grass of Mexico?

We should think its value and susceptibility of being adapted to Maryland, and states south of it, will not have escaped the notice of such observant officers as Col. Hughes and Col. Emory.

Texan Grasses.—Mr. J. H. Grieve favored the Council with the following communication: "43 King's Road, Feb. 18, 1845.—Having observed in the Report of the proceedings of the Council, at its last meeting, a notice on the subject of the Tussac Grass, I thought it might not be uninteresting for you to know, that in my late rambles at Texas I frequently met with a species of Grass *strongly resembling the specimens of Tussac Grass laid before the Council on that occasion.* The Grass to which I allude seemed to confine itself to low swampy spots, and where the soil was evidently impregnated with salt. Texas contains a variety of Grasses, as well as other plants, that are, I believe, almost unknown to the world at large; and, amongst others, the Grass that stands highest in the estimation of the natives, and which, from my own experience, I have observed to be most palatable to the different animals, at the same time evincing the most nourishing qualities, is that which the Mexicans have named Musquite Grass. There are said to be three descriptions of Musquite Grass, of which only two have come under my notice; the one is of a diminutive and silky nature, and the other of a more vigorous, but at the same time of a coarse growth. The conformation of the seed of the first description offers an almost insurmountable obstacle to its ever becoming a cultivated plant. Its form is that of a cylinder, of about half an inch long, and 1-72 of an inch in diameter, firmly adhering to an awn of nearly the same thickness, and of an inch in length, which is furnished at the end with three collateral awns or branches. This appendage being of a tough nature, it is easy to conceive the difficulty there would be in equally disentangling and distributing so light a seed. The second or coarse Grass bears an Oat-shaped seed, containing a considerable portion of farinaceous matter, and is also furnished with a spiral awn, of a thick and fragile nature, and susceptible of being detached from the seed. This Grass grows with a thick sward, and rises to the height of about 2 feet. I observed some German emigrants cutting it for hay, which was of an excellent quality. So far as my observation led me to judge, those Grasses are confined to a range of country in Western Texas, bounded on the east by the Guadaloupe river; but as this may be attributed to the fact that this district is of diluvial formation, it may be inferred that these Grasses abound in many parts of the interior of the country. In the extensive prairies where those Grasses are to be found, they almost exclude all other growth; and the numbers of cattle and wild horses that range upon them, and their sleek skins and fine condition bear ample testimony to the nutritive qualities of the pasture. It may also be observed, that even the deer were fatter, and offered a richer venison than those in the eastern districts of Texas. It will give me much pleasure if these remarks should give the Council satisfaction, and I shall at any time be happy to afford you any further information that may be in my power.

A Novel Mode of Stealing Turnips.—On Sunday afternoon last, as Mr. George Cole, switchman, on the Eastern Union line, who is stationed at the north end of the tunnel, was looking along the line of railway in the direction of Handford Hall, his attention was arrested by the actions of a dog in a turnip field belonging to the railway company. Seeing the dog hunting about the field in a rather peculiar way, Mr. Cole walked some little way down the line to enable him the more closely to watch the dog's movement. Having walked to within 150 yards of where the dog was, Mr. Cole distinctly saw him put his head down and draw a turnip from the field and carry it immediately into the lane adjoining, where he noticed three persons standing. The dog having left the turnip with these men, he was again sent over into the field and drew another turnip, which he conveyed to the men stationed in the lane in the same way as he did the former one: the dog having repeated the same act three or four times successively, each time conveying a turnip to his supposed master and his companions, and they suspecting Cole was making his way to the place where they were located, with an intention to take them into custody, they ran away as fast as they could, followed by the sagacious animal.—*Ipswich Express.*

CHLORIDE OF LIME A PREVENTION FOR SMUT IN WHEAT.

I BEG to send you, for the information of the numerous class of readers of the Gazette, an account of an experiment lately instituted at the Botanic Gardens of the Royal Dublin Society, for the purpose of ascertaining the value of chloride of lime, first proposed by me as a prevention of smut in Wheat. From some microscopic examinations of the two kinds of smut with which our grain crops are liable to be attacked, and from the bleaching properties of chloride of lime, coupled with its alkalinity and deodorising power, I was induced to believe that this substance would be peculiarly efficacious as a dressing for Wheat, and other corn seed, previous to its being sown—an expectation which, I am happy to say, experiment has fully justified. In last spring I procured 4 lbs. of very fine Wheat seed, 1 lb. of which I laid aside, not having subjected it to any preparatory process. The remaining 3 lbs. I then mixed intimately with a large quantity of smut or bunt—the sporidia of the Uredo caries—in sufficient quantity to color the entire a light brown. This I divided into three equal parts, which, with the preceding parcel of clean seed, made four parcels of 1 lb. each. One pound of the infected seed I then steeped for two hours in a saturated solution of chloride of lime, and, after pouring off the solution, sifted some fine sand over it to dry it, and thus render it easily sown. The mixed portion of the infected seed I treated in the manner so strongly recommended by the French commissioners, viz., steeping the seed for two hours in a saturated solution of sulphate of soda, and drying with quicklime sifted over it. The third parcel of infected seed was not subjected to any further treatment. The four parcels of seed were then, on the 8th of March last, sown in four similar plots of ground; they all appeared above ground on the 1st of April, and, the crop being fully ripe, it was cut on the 5th September. The result of the experiment, which was apparent even while the crop was standing, I beg leave now to lay before you :—Plot No. 1, sown with 1 lb. of clean, undressed Wheat seed; No. 2, 1 lb. of infected seed steeped in solution of chloride of lime; No. 3, 1 lb. of infected seed steeped in solution of sulphate of soda, and dried with quicklime; and No. 4, 1 lb. of infected seed, undressed. One pound of the ears of the produce of each plot, cut close off, was counted, and the number of the sound and smutted ears recorded. In the same manner the number of straws in 1 lb., deprived of the ears was ascertained. The following are the numbers of each :

Plot.	*Total No. of Ears in 1 lb.*	*No. of Sound Ears in 1 lb.*	*No. of Smutted Ears in 1 lb.*	*No. of Straws in lb.*
No. 1.	336	336	—	234
No. 2.	364	362	2	268
No. 3.	632	352	220	278
No. 4.	702	362	340	330

Among the numerous deductions which the foregoing estimation warrants, one is quite obvious—that the chloride of lime dressing is far more efficacious, as a preventive of smut or bunt in Wheat, than the dressing so highly recommended by the French commissioners insuring not only the grain from the attacks of the fungus, but preventing the deterioration of the straw, which this Uredo appears also to occasion. I purpose next year to repeat this experiment, with a view to determine not only the efficacy of the chloride of lime compared with the dressings in common use, but to test its power in destroying that other pest of our cereal crops —the Uredo segetum.—*W. Edward Steel, M. D., 15 Hatch-st., Dublin.*

THE MUSCULAR SYSTEM OF THE HORSE.

In the last number of the "Plough, the Loom and the Anvil," we explained and illustrated the *anatomy* of the Horse. The reader will readily distinguish between that and his *muscular system*, of which we shall now treat, adverting to those points of structure and established principles, on which his usefulness and beauty, so materially depend.

Fig. 1. The forehead. Few things more clearly indicate the blood of the horse than the forehead. In the blood-horse the forehead is broad and angular, gradually tapering from this point to the muzzle; whilst in the cart-horse the face is large, and the forehead narrow in comparison with that of the blood-horse.

2. The eye-pit. By the depth of the eye-pit we are enabled to form some idea of the age of the horse: at the posterior part of the eye a considerable quantity of fatty substance is deposited, which enables it to revolve in its orbit with facility and freedom: in old age, and in diseases attended with general loss of condition, much of this fatty substance disappears, the eye becomes sunken, and the pit above the eye deepens. To obviate this appearance, some of the lower class of horse-dealers puncture the skin, and, by means of a quill or tobacco-pipe, blow into the orifice, and thus fill up the depression. This operation is called "puffing the glims," and may be easily detected by the application of pressure.

3. The poll.

4. The muzzle. The muzzle includes the lips, mouth, and nostrils. The darker the color of the muzzle, the more is the horse esteemed. The lips should be thin and firm; in old and slugglish horses they are usually loose and pendulous.

5. The withers. The speed and action of the horse is intimately connected with the length and height of the withers, and such a development is absolutely necessary in the hunter, the hackney, and the farmer's horse; but in the heavy cart-horse this rule may be reversed, as the more bulky and weighty he is before, the more advantageously will his powers be applied.

6. The croup. The croup, which extends from the loins to the setting on of the tail, should be long, and but slightly rounded.

9. The hock.

10. The sheath.

11. The flank. The space contained between the ribs and haunches is called the flank; when too extensive, it is an indication of weakness. The flank is usually referred to as indicating the state of respiration; during fever and chronic diseases of the lungs, it rises and falls with a rapidity greater than under ordinary circumstances.

12. The girth or brisket.

13. The shoulder. A muscular and slanting shoulder is indispensable where action and speed are required; but an upright shoulder may be preferable for horses exclusively destined for the collar.

14. The elbow. Good judges prefer a deep elbow, as it is always connected with increased power of action.

15-15. The arms. It is universally agreed that the arms should be long, large, and muscular; if they are flat on the sides, and narrow in front as they approximate the shoulders, and deficient in muscle, they are radically defective, and the horse should of course be rejected.

16. The knee. The knee should be broad, as offering more space for the attachment of muscles—breadth in this part being an indication of strength.

17-29. The cannon, or shank. The cannon should appear wide when viewed laterally, and thin in front, as any addition besides bone and tendon, must arise from disease, or useless cellular matter.

18. Back sinews. The back sinews should be large, firm, and distinctly felt from the knee to the fetlock. If there be any thickness of cellular matter around them, it indicates previous injury, as a rupture of the ligamentous fibres; and as this thickening may limit the motion of the tendon, and predispose the part to a recurrence of lameness and inflammation, such a horse, although perfectly free from lameness at the time of examination, should be regarded with suspicion, and rejected as unsound.

19-30. The fetlock joint. It is usual to apply the term fetlock to the joint itself; and the space between the fetlock and the foot, the pastern; but, properly speaking, the fetlock, or *footlock*, is only the posterior part of the joint, from whence grows a lock or portion of hair.

20-31. The pasterns. The pasterns should neither be too long nor too short; if too short, they are non-elastic, and such horses are uneasy goers, and unsafe to ride; on the contrary, if they are too long, they are frequently too oblique, and although from their elasticity the motion of the horse may be pleasant to the rider, yet an increased length of limb is an indication of weakness.

21-32. The coffin joint.

22-33. The hoof.

23 The hock. The hock is the most important and complicated joint of the whole animal; like the knee, it should be hard and extended. An enlarged hock constitutes unsoundness.

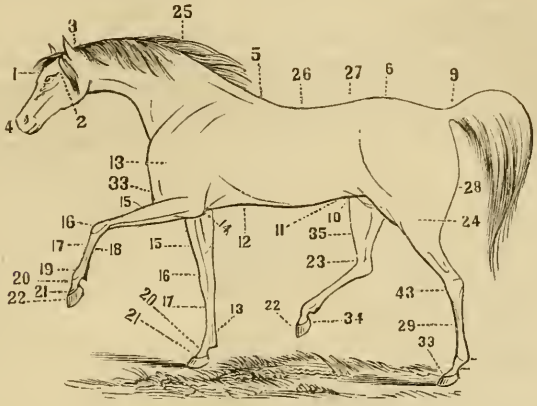
24. The haunch.

25. The neck. A moderate and elegant curve of the neck adds greatly to the beauty of the horse. The neck is sometimes recurved and hollow; a horse with such a conformation is called ewe-necked.

26. The back. The comparative advantage of a long or short back depends entirely on the use for which the horse is intended. For general purposes (says Youatt,) a horse with a short carcase is very properly preferred. He will possess health and strength—for horses of this kind are proverbially strong. He will have sufficient ease not to fatigue the rider, and speed for every ordinary purpose. Length of back will always be desirable when there is more than usual substance, and particularly when the loins are wide, and the muscles of the loins large and swelling. The requisites, strength and speed, would then probably be united. The back should be depressed a little immediately behind the withers; and then continue in an almost straight line to the loins. This is the form most consistent with beauty and strength. Some horses have a considerable hollow behind the withers; these are called *saddle-backed;* a few have the curve outwards, and are called *roached-back*. This is a very serious defect, altogether incompatible with beauty, and materially diminishing the usefulness of the animal.

27. The loins can scarcely be too broad and muscular; the strength of the back and hinder extremities hinges upon this point. At the union of the back with the loins, a slight depression is sometimes observable; this must always be regarded as an indication of weakness.

28. The hind quarter.
35. The inside of the thigh or stifle.
38. The point of the shoulder.



WOOL EXHIBITED AT THE NEW-YORK COUNTY AGRICULTURAL FAIR, 1850.

Copy of a letter from L G. Morris, Esq., Chairman of the Board of Agriculture of New-York:

"J. S. Skinner, Esq.—

"*My Dear Sir:* I send you the samples of wool promised; they were obtained for you *on the condition* that you would send each of the parties the number of your *Journal in which you make mention of them.*

"I remain yours, with respect and esteem,

Fordham, Westchester, Co., N. Y. "L. G. Morris."

Samples of wool and weight of fleeces of three Saxony Ewes, the property of W. Wakeman, North East, Dutchess county, New-York.

Number I.

One ewe, 4 years old, weight of fleece, 3½ lbs.
One ewe, 3 years old, do do 3½ "
One ewe, 2 years old, do do 3 "

Also, 2 Saxony bucks belonging to the same person.

Number II.

One 3 year old Buck, weight of fleece, 5 lbs.
One 3 year old do do do 4¾ "

Samples of wool of two Spanish Merino Bucks, the property of Jos. Blakeslee, Conn

Number III.

One Spanish Merino Buck, No. 26.
One do do do No. 27.

Also, sample of wool of the property of Samuel N. Blakeslee, Watertown, Conn.

Number IV.

No. 23.

Sample of wool of Spanish Merino Buck, the property of Lewis Thrall, of Farrington, Conn.

Number V.

One Spanish Merino Buck, No. 17.

Also, of 3 Spanish Merino ewes belonging to same person.

Number VI.

Three Spanish Merino Ewes, No. 16.

Number VII.

Samples of wool of a Buck, belonging to D. W. Catlin, New-York.

One buck, No. 15.
Two Ewes, No. 14.

Also, of Ewe No. 74, not exhibited.
One Ewe, 3 years old, No. 74.

We handed the above letter and specimens to our friend P. A. Browne, who sent us the following answer :

"To J. S. Skinner, Esq.—

"Dear Sir: As you and I, in the examination and measurement of wool, "work for nothing and find ourselves," it seems rather ungracious to put you *under conditions* to obtain specimens for me. My first impulse was to decline examining the above specimens, but friendship for you and a desire to aid in the improvement of the fleece of the United States, prevailed in inducing me to measure them, and the following is the result."

"Yours, truly,
"P. A. Browne."

	Number of the Pen.	Diameter.
New-York.	No. 1, 4 year old Ewe,	1-1875.
	3 do do	1-1875.
	2 do do	no specimen.
	No. 2, 3 year old Buck,	1-2186.
	3 do do	1-2186.
Connecticut.	No. 3, Spanish Merino Buck,	1-1250.
	do do	1-1875.
	Wool,	1-1572.
	No. 4, No. 23,	1-1572.
	No. 5, Spanish Merino Buck, " 17,	1-1875.
	3 do do Ewes,	1-1875.
	No. 6, Spanish Merino Ewes, No. 16,	no specimen.
N. Y.	No. 7, One Buck, No. 15,	1-2184.
	Ewes, No. 14,	1-1250 and 1875.—2 specimens.
	Ewe 3 year old, " 74,	1-2186.

PROFITS OF BEE-KEEPING.

Mr. D. Auld, of Doonbrae Cottage, in Ayrshire, obtained 108 lbs. of honey from one hive during the past season; it was valued at 2s. per lb., making a profit of more than £10 from one hive. And Mr. T. Nutt, of Spalding, Lincolnshire, obtained 110 lbs. of pure honey from a set of his collateral boxes during the same season, which, at the above price, would be a profit of £11 from one hive. Perhaps somebody acquainted with their system of management, or with another equally profitable, will relate the particulars in an early number.—*E. B., Stamford.*

Mr. Auld, being written to, said :—

The statement respecting the honey obtained by me from one hive is incorrect; the following are the facts of the case :—

Honey produced by one hive of bees.	*lbs*	*oz.*
July, 1844.—One box from main hive yielded.	28	8
Sept, 12th.—Another ditto,	28	0
Left for winter provisions, including bees and wax,	33	5
	89	13
Allowance for bees 4 lbs., for wax 1 lb. 13 oz.,	5	13
Total	84	0

	£	s.	d.
Honeycomb in first box, very pure, worth 3s. per lb.	4	5	6
In 2d do., not quite so pure, worth 2s. 3d.	3	2	0
Do. left for winter provision, worth 1s. 8d.	2	12	4
Total	10	1	10

Though this statement differs from that at p. 55, which is 108 lbs., still 56 lbs. of honey from one hive was a great deal, and shows how the produce from bees differs according to the pasturage and the seasons. The 33 lbs. 5 oz. of honey left in the hive ought however not to have been included, but should have been left as an equivalent for the honey that happened to be in the hive when purchased.

Will some one tell us what is considered a fair and an extraordinary yield in this country? Why does not every farmer keep one or more bee hives?—*Ed. P. L. & A.*

ON THE PRODUCTION OF SUGAR IN PLANTS.

Extracts from a paper by M. Gaudichand in the "Comptes Rendus."

It is well known that the root of Beet often grows to a very large size, and that its height, varying with the soil, is often four, five, or even six inches above the surface of the ground. It naturally occurred to us to try and discover the relative proportions of sugar in the upper and lower parts of these fleshy roots, and we found that not only is sugar more abundant in the lower than in the upper part, but that it is also purer and more easily extracted.

As we were at this time almost wholly occupied with chemistry, and we had, besides, every facility for experimenting, we did not suffer our enquiries to stop here. In a botanic garden that we had made, we cultivated Beet, and the soil being suitable, some very large specimens were obtained.

Having previously discovered that the lower and under-ground portions of the root contained more sugar than the upper portions that were exposed to the air, and attributing this difference to the action of the air and of light, or, in other words, to the formation, in the tops of the roots, of different principles, we covered the upper parts of a certain number of roots with earth; and on examination three weeks or a month afterwards, these were found to contain much more sugar in their upper extremities than those of the roots which were not covered up.

All the observations that we have made on plants containing sugar (excepting those which only contain that principle when blanched), show that the quantity of saccharine matter is directly proportional to the degree of ripeness of the plant or part of the plant containing it. Beet-root, fruits, the Sugar-cane, &c., show this completely.

We have already spoken of the Sugar-cane, and our present subject leads us to refer to it again to prove the truth of our assertions, and to support them by still stronger testimony. Every one knows that this plant is a grass whose phytons developing the one above, after and within the other, form a slender articulated stem, each node of which carries a leaf. New experiments clearly show that in the Sugar-cane saccharification begins at the bottom and proceeds very gradually to the top of the stem, joint by joint, or, to speak more properly, phyton by phyton, and that the lower internodes are quite ripe and sweet, while the upper ones are still herbaceous, and more and more acrid as they get nearer the top. This important fact has been determined in a still more direct manner by M. A. Vinson, sen., of the Isle of Bourbon, who has derived from it great practical advantages.

The following is the substance of a communication on this subject received from this gentleman on the 24th of October, 1842:—"I received the copies of your new memoirs, &c. With regard to the Sugar-cane, a fact of the greatest practical importance for my establishment has been ascertained by experiment. It is at complete variance with all ideas hitherto received. Science comes to the aid of practice, and that is its greatest triumph. This is what I refer to.

"We buy at our factory Sugar-cane juice. The Sugar-cane planters, myself among the number, thought that the green canes gave more syrup than those which were ripe, and which, according to them, ought to be left in the ground to dry. They knew very well that the juice of the green cane contained less sugar than that of the ripe cane; but, looking only at the quantity and not at all at the quality, we were induced to use their canes before they were ripe, and thus suffer considerable losses.

"The syrup of the green cane marks, on Baume's areometer, from 8° to 10°; and in proportion as the juice is elaborated, it marks from 10° to 13°, generally 12° 30'. Now, experiment has shown me that the quantity of syrup is greater in the ripe than in the green cane. It is then advantageous both with respect to quantity and quality, to allow the canes to ripen.

"In the green cane the bark is thick and hard, the longitudinal threads are confused, the cells are not distinct, their partitions are thick and without empty spaces; whence it results that the parenchyma forms a compact opaque mass, which, when strongly pressed, gives a liquid that is albuminous, mucilaginous, starchy, and scarcely sweet. The cane, when it comes from the cylinders, assumes, after the most violent pressure, its original shape.

"In the ripe cane, on the contrary, the bark is thin, the longitudinal threads are quite distinct; the parenchyma, as seen under a microscope, is composed of thin expanded partitions, and full of juice, which is the more abundant and sweet as the plant is riper. The cane, when it comes from the cylinders, is completely crushed."

The letter from which the above is taken contains the following table, which, from its evident utility, deserves, I think, to be laid before the public:

Physical state of the Canes	*Months of work*	*Conveyed by two mules mean size.*	*Quantity ob'd from a mill of 12 horses.*	*Deg. marked by Baume's arcometer.*	*State of the Season.*
Green Canes,	July	1	1 cask 45 c.	9,00°	Cold and rainy.
Do	Aug.	1	56 c.	9,45°	do do
Yellowish do.	Sept.	1	68 c.	10,30°	A little warmer but rainy.
Nearly ripe do.	Oct.	1	89 c.	11,30°	Hot and dry.

It is not the leaves, which in the Beet, Maize, Palm-trees, Sugar-canes, &c., secrete the saccharine matters; but the tissues of the stem, of the root, or concentric layers, and particularly the oldest and lowest, as in the Sugar-cane, or of the centre of the lower portions, as in the Beet, Palm-trees, &c.

ON THE ADVANTAGE OF REDUCING THE FOOD OF CATTLE BEFORE GIVING IT.

As I have just concluded the experiments you wished, I hasten to forward you the results, which are as follows:—Two horses in good health, in daily work, and as nearly as possible equal in size and age, were selected for the experiment. They were each allowed 5 lbs. of Oats, 42 lbs. per bushel, and a sufficiency of good hay, of which they consumed about 17 lbs. per diem each horse. The only difference in the feeding consisted in one horse having the Oats thoroughly crushed, and the other being allowed the Oats uncrushed. On the fourth day of the above mode of feeding, the solid excrements of each horse were examined. 100 parts of the dung from the horse fed on crushed Oats were found to be deprived of all the nutritious matter contained in the food, and to consist of woody fibre, mixed with the animal secretions and some salts; while 100 parts of the dung from the horse fed on uncrushed Oats, were found to contain 1.4 per cent. of nutrive matter, consisting of starch and gluten, which had not been acted on by the stomach, mixed with the ordinary constituents of the solid excrements of the animal—this arising from the inability of the horse to perform perfect mastication, and must vary with circumstances, such as age and rapidity of feeding. The same horses were then fed with cut and uncut food, consisting of hay cut into chaff, and hay uncut. At the expiration of the third day, the excrements were examined, but no chemical difference in their composition was detected; the food, in both instances was found to be equally exhausted of its nutritive matter. The shorter period occupied by the horse in filling its stomach, and consequently greater amount of rest obtained, and the means of mixing food and preventing waste by cutting it into chaff, requires no observation from me, but will be material points in this mode of feeding.—*A. Gyde, Painswick.*

WHAT FOREIGNERS SAY OF AMERICAN AGRICULTURE AND AGRICULTURISTS.

The distinguished agricultural Chemist and Lecturer, Professor Johnston, (not Johnson,) visited the United States in the summer and autumn of 1849. It was, we believe, on invitation from the New-York State Agricultural Society and the American Institute; to deliver the Annual Address before the former of these institutions, at Syracuse, N. Y., and to deliver a series of lectures on the Science and Art of Cultivation, Animal and Vegetable Physiology, &c.

We had not the pleasure to hear him, and if we had, might not have presumed to say positively whether, with less trouble and equal inducement, as much light might not have been elicited from some of our own Professors. We are, however, bound to presume, that his disquisitions were eminently profound and instructive, since, in an account which he has lately given publicly in England, of the Field and mental cultivation, of the Farmers of the United States, he says, there are 40,000 copies of his lectures to be gratuitously distributed, by the State of New-York, for illuminating the public mind on the topics discussed by him. Still we confess to strong doubts, whether the same amount of public expenditure, bestowed for gratuitous distribution, of the agricultural journals of New-York, would not have spread over the land practical information of equal value, and of much greater variety. It ought not perhaps to be forgotten, to the extent that it seems to be forgotten, that it has been by the influence of these journals, and the industry of their conductors, that a spirit of inquiry and improvement has been excited among the people, to which the present State and other Agricultural Societies owe their own existence. Our purpose at present, however, is merely to let the American agriculturists see, in what light the condition and state of cultivation of their lands and themselves, is regarded by a gentleman enjoying high renown as a scientific agriculturist in his own country, and who ought to be a first-rate judge, since he was selected and sent for, to come all the way from the Mother country to lecture the Daughter, as to the agricultural ways and habits that best become her.

Strongly as we believed and have said, that the productiveness of Western agriculture is on the decline, we were yet not quite prepared for what the Professor tell us of the wheat yielding capabilities of our very young sister Michigan, to wit: that "between Lakes Superior and Erie, the average produce is not twelve bushels per acre, but it is got for nothing." Now might he not have pertinently added, for the information of his English auditors, that in the production of 12 bushels of wheat in Michigan, the laborer employed in the operation consumes four times as much of the substantial good things of life;—bread, meat and clothing—as is consumed in the production of the same quantity in England? A correspondent of the English Agricultural Gazette in December, speaking of the condition of English Agricultural laborers, says:

The condition of a laborer with a large family of young children is decidedly very bad at the present day in many parts of England; and in the part of the agricultural county in which I reside, where laborers' wages are only from 7s. to 8s. a week, he must find it difficult to live in anything like a state of comfort. His weekly accounts stands thus:

5 gallons of flour, or equivalents,	4s. 2d.
Fuel, salt, soap, and candles,	1 6
Rent,	1 6
Tea and sugar,	0 10
Total,	8s. 0d.

Where the maximum of regular wages is but 8s., it is plain that a family consisting of many individuals, unless they earn extra sums at harvest work, to meet the charges for clothing, schooling, and contingencies, must be in a very distressed condition, yet a small family, consuming perhaps but half the quantity of bread I have estimated, may enjoy the luxuries of tea and sugar, and a little meat occasionally, and butter with their bread.

Here it will be observed, meat is not even mentioned, and the wages are at the maximum $1,92 per week, out of which he is to find *everything* for himself and family. Mr. Robinson, writing from the midst of the Southern sugar and cotton plantations, for the American Agriculturist, says, that the slave, besides being well found in clothes, comfortable houses, medical attendance, vegetables, corn meal, ad libitum, &c., gets four pounds a week of good pork, each working man, besides a corresponding allowance of all these for women and children. While enlightening the people of England on the condition of American Agriculture and Agriculturists, would it not have been natural and pertinent to have brought these things to their view?—that is, if the object was, as may be presumed, to enable them to compare justly the two countries, in these respects.

We should have been surprised too, to learn what he avers, that in Genessee, "where the land is [we suppose he means naturally] more fertile than in any part of Great Britain, they were laying their lands down to grass, because they *cannot afford to grow wheat.*" We should, we say, have been a little surprised at the annunciation of this fact, as to Genessee, had we not been so recently told by the Hon. Willoughby Newton, in his admirable address at Baltimore, that "the Genessee valley has fallen in production from 25 to 10 bushels of wheat to the acre."

After these assurances on authority so respectable, our friends in Maryland will be the less inclined to resent estimates that place them a peg higher, even than their brother Farmers in the famous Genessee valley. One thing still is not free from perplexity—how land so much exhausted, as not to pay in the production of wheat, can be "*laid down to grass.*" We have heard of land utterly exhausted being "turned out" to grow up in broom sedge, as a faithful old horse is turned out to grass and to die, to the disgrace of his owner; but when land is *laid down to grass*, it is generally understood to have been specially prepared for it, under circumstances that qualify it to yield more in grass, meat and dairy products, than in grain.

Mr. Johnston would seem to suppose, that the formation of Agricultural Societies, had been but recently resorted to, as a hopeful expedient, to retrieve American agriculture from the very low condition in which he represents it. More extended familiarity with our agricultural annals would have taught him, that such associations were among the early fruits of national independence, in Massachusetts, New-York, Pennsylvania, Virginia and South Carolina—old states which had been already exhausted under the colonial system of "subjection to the policy of British merchants," so feelingly deprecated by General Jackson. A policy under which the Mother, since before our Revolution, had so kindly received from her dutiful children all their rude hand-made products, and having with her machine power, improved by a monopoly of 1000 years, prepared the said products for consumption, pocketed herself all the profits derived from their conversion into shape for actual use, and then sent them back to her dearly beloved children saddled with the profits she had retained, and with all expenses of transportation, to and fro; to be finally consumed by those who, for want of power in their infancy, were compelled to submit to her force and her humbuggery. But being then

feeble colonies, it was pardonable to submit to what we could not help. The absolute dominion of the savage over his squaw, and his prolonged mastery over his Papoos, excite no surprise. But having in the memorable year of 1776 set up for ourselves, in a *Declaration* of Independence, why should we continue to send our cotton to English Looms, instead of forcing the Looms—the light machines—to come to the cotton fields, and the furnaces to come to the ore?—so much so, that not a year since, the Edinburgh Review, in a spirit of truth-telling, expressly called the United States "*a colony of Great Britain in a matured state.*" Read the statement of our able Minister in London, than whom there can be no higher authority on such subjects, that "we have now in Europe $150,000,000 of United States', State, City, and Corporation Bonds, which have been sold here, to pay the balance of trade against us—in other words, for the products of foreign lobor, to the detriment of our own." Can human folly, fanaticism, or improvidence well go further? But to return to our Agricultural Societies, to which this accomplished English Lecturer would seem to think we are looking as a panacea for the shocking evils he depicts, we repeat, that we have for more than half a century had recourse to them, for all the help they could give, composed and conducted as they have been by such men as Pickering, Lowell, the Livingstons, Peters, Madison, Taylors, Pinkneys, &c., from Boston to Charleston; yet instead of proving effectual remedies against the malady they were designed to cure, they have so far proved to be mere spasmodic efforts, only checking the progress of that decay which, having a much deeper root, such expedients can never reach and extirpate; and especially as long as such Associations are determined to look only skin deep into the subject, *forbidding all discussion on the bearing of public legislation, on the interests of their pursuit.* Does not every social interest, and every industrial occupation, depend, more than on any thing else, on the *nature of the laws?*

All the agricultural societies that can be formed, unless formed for the protection of agricultural labor and capital, will never arrest, though they may serve as slight checks to, the progress of agricultural exhaustion, and the dispersion of our population. Aye, reader, be assured *this* is the British Lion, half-starved and rapacious, that stands in the path of our onward progress; and that, to fill his own insatiable maw, would starve the United States, as he has starved every country upon which he could, by his fleets and armies, impose the "policy of British merchants;" and until we determine, by a system of our own, an American system, to protect ourselves against his strength and his stratagems, he will continue to appropriate to himself the "Lion's share," though he should starve America and the "rest of mankind." But thank God, the people are beginning to open their eyes, and to see that we are old enough and large enough to walk abroad in the majesty of our own strength, and the pride of our own opinions. The day is coming when the friends of free trade will unite in travelling the same road, to the same goal—that road now is *protection to our own labor;* until, by it, we shall have prepared ourselves to meet our antagonists on equal terms, and be ready then to exclaim:

"Lay on, Macduff,
And damn'd be he who first cries 'hold enough!'"

But after all, it is not that we are so much behind England in knowledge. The great fundamental process, ploughing; and the finishing stroke, mowing; are as well understood here as there. We even doubt whether in

this country can be found, as many as there, of *wooden mould-board* ploughs, drawn by three, if not four, horses in a string, to say nothing of the character of the ploughman. It may not be inapposite to the subject in hand, to mention, that the London Morning Chronicle, after publishing very able reports on the condition of Agricultural laborers in England, has sent well-qualified commissioners abroad, to survey and report upon the Agricultural and the Rural Population of the Continent. In an English paper of very recent date, we find the report as to the Agriculture of DENMARK, one of the countries with which we have to contend in the "great grain markets of the world." It could not fail to entertain the reader to see what is said of the wonderful progress which is there making in the Implements and Arts of Agriculture; but we have already extended these remarks far beyond what we had expected to do; and will only therefore add, what the Reporter says as respects their *ploughs:* "One of the best proofs that can be given of the progress that has been made, is to be found in the fact, that the use of the clumsy and comparatively useless wheel-plough (which still maintains its ground in Germany, France, and some parts of England,) has been universally abandoned, and the swing-plough, a Scottish plough, has been introduced in its stead. This implement is generally made entirely of iron—the *favorite pattern* of which is said to have *come from the United States*, and is generally called the *North American*."

And here it will occur to the agricultural reader, as connected with the visit of this distinguished English lecturer, that at the annual meeting of the Royal Agricultural Society in 1845, they acknowledge the presentation of the Memoirs of the old Massachusetts Agricultural Society, by our then able Minister, now occupying the most covetable of all earthly posts—an opulent and retired Scholar in his Library, surrounded by enduring friends, with whom he may converse on every subject, "from lively to severe," as he may be in the vein, to seek either amusement or additions to his own ample stores of knowledge. Delightful consummation! Mr. Everett presented at the same time, the Prize Essays of Mr. Dana and Mr. Foote. The latter Essay we have not seen, but the former will, in our poor judgment, well compare with any English essay on any agricultural subject. On the occasion referred to, Mr. Thompson, the learned author, we presume, of Thompson's Chemistry, remarked, "that in those essays the principles of chemistry, in reference to their application to agricultural processes, were explained with a clearness and precision he *had never before met with;* and he thought Mr. Colman would confer *a great favor* on the agriculture of this country [England] by *facilitating the importation of those essays*."

We say nothing here of Ruffin's pirated but yet unequalled essay, on calcareous manures, as not so immediately connected with the topic in hand, though going far to justify the belief, that while the purposes in view would be as well achieved, by bestowing on our own fellow-citizens, the few honors and rewards in store in our country, for any service to Agriculture; we should by doing so, just as well consult that feeling of national pride and self-respect, which of itself begets the capacity to be useful. But, alas! in how many ways is demonstrated the truth, of a remark by Mr. Carey in our last, that "ever prone to follow in the train of England, we have ever shown ourselves ready to adopt her modes of thought, disclaiming even the notion of independence!" And all this is said in a consciousness of perfect freedom from any disposition to detract,

from the well-known abilities of the Author of what follows on American agriculture.

At a recent meeting of the East of Berwickshire Farmers' Club, Professor Johnston, recently returned from America, at the request of his friend, Mr. Milne, of Milne-Garden, delivered the following address, which we have much pleasure in laying before our readers :—

I will briefly refer to some points which came under my observation in that part of the country which I visited. First of all, as to the state of agriculture in the northern parts of America, in our own provinces, and in New England, with which we are ourselves more familiar, when I tell you generally that the state of agriculture in those parts of America is what the state of agriculture in Scotland probably was 80 or 90 years ago; and when I tell you that in some parts of New Brunswick they are very nearly in the precise condition in which Scotland was 120 years ago, you will have an idea of the state of agriculture in North America. The system of agriculture is no farther forward—it is exceedingly far behind. They are not even acquainted with the improved methods of farming, or the improved implements which are now in common use in this country; while the increased facilities which Mr. Milne would still farther introduce have never even been heard of by them. Now, in regard to this state of things in the whole of the northern part of America, go as far west as you like, and as far south as you like, the same general description applies to the whole. Now, the next question is, how has this state of things been brought about? You are probably not all so well acquainted with the state of agriculture in this country 100 or 120 years ago as I have found it my duty to make myself; and at the time to which I refer, I allude not only to the state of great ignorance in regard to the cultivation of the soil, but to the state of exhaustion in the soil itself. So in referring to the present state of agriculture in America, I refer to two considerations—the condition of mind brought to bear upon the cultivation of the land, and the state of the land itself. In regard to the cultivation of land in America, its condition arises from a variety of causes, and very few considerations will enable you to understand how it has come about. If you ask yourselves to what class does the majority of emigrants belong, you will have no difficulty in coming to a conclusion. Look at the great crowds of people who go from Ireland, from the Highlands of Scotland, and the hundreds of thousands proceeding from the great towns of England and Scotland—ask yourselves of what class they consist—what amount of intelligence and agricultural knowledge they possess; and in the answer to this you will at once find the key to the state of the land in the whole northern part of America. The people who first settled in America knew nothing of agriculture, and their descendents have generally copied the habits of their predecessors. Thus it came that their sons knew nothing; out of the way of books—out of the way of instruction, supposing them to have even read books which gave instruction, they would have made very little progress; but we must suppose them not to have had an opportunity of gaining knowledge, and therefore instead of advancing, they have retrogaded in agricultural knowledge and practice. Now, what has been their procedure—by what kind of procedure have they brought about the state of exhaustion to which the soil has been reduced? Of course, in speaking of the exhausted soil, I do not refer to the virgin soil which has never received the plough or the spade, but to the soil under their cultivation, and which they are now exhausting. When I tell you how the land is cultivated, you will understand how this exhaustion has been produced. The forest is in the first place cut down and burnt, after which the ashes are scattered, and a crop of wheat and oats is sown. When this crop is cut down another is sown; but they do not always remove the straw—they do not trouble themselves with any manure. The second year they sow it again and harrow it, and generally take three crops in succession. When they can take no more out of it, they either sow grass seeds, or as frequently let it seed itself. They will then sometimes cut hay for 12, 14, 16, 18, or 20 years in succession; in fact, as long as they can even get half a ton an acre from it. And you may suppose what is the natural fertility of the land when they are able to obtain as much as three or four tons per acre at first, and go on cutting it for 12 years. They will probably have two tons an acre during all that length of time. The land is then broken up, and the crop of oats taken, then potatoes, then a crop of wheat, and then hay for 12 years again, and so the same course is repeated. Now this is the way in which the land is treated—this is the way in which the exhaustion is brought about. This exhaustion exists in Nova Scotia, New Brunswick, Lower Canada, in Upper Canada to a considerable extent, over the whole of New England, and extends even into the state of New-York. The next inquiry which you will make is—what steps are they taking to remedy this state of things? Are they doing anything to bring back the land to a productive condition? and, in order to do this, are they taking steps to put any knowledge into the heads of those who cultivate it? Now, on those points I am happy to say that I can speak very favorably. They possess the spirit of their forefathers, and

having become conscious of the state in which agriculture really is, they are endeavoring to improve it. But you will ask—what inducement have they to make these exertions? They grow corn enough—they have no want of agricultural produce as we have; but when I tell you what is the condition of New England in reference to the Western States you will understand. All the new states—all the virgin land, when it is cultivated, yields a crop for little or nothing, but it cannot yield by any means a large crop. In the State of Michigan, between Lakes Superior and Erie, the average produce is not 12 bushels an acre, but it is got for nothing. In New Brunswick, which is very thinly populated, I was told that 10 bushels an acre paid well; but the produce is not large. In the Western States they are enabled to produce it very cheaply.

Mr. Hay.—What was the value of a bushel of wheat?

Professor Johnston.—At the time I was there the price varied from 60 to 80 cents a bushel, *i. e.*, 100 cents being 4s. 4d. In the extensive Western States, and part of New-York, where it is shipped to England, the price varies according to the distance. Now, the condition of things in the Western States, in reference to England, is precisely the same as the condition of England in reference to the wheat-producing countries of the Baltic. The condition of the farmers is exceedingly bad, and in Maine I was informed that they were all in a state of bankruptcy. The land is all mortgaged, which hangs like a mill-stone round their necks, and is worse even than the state of farmers in this country. They are thus unable to compete with the western parts of New-York or Lake Ontario. You have all heard of the famous wheat of Genessee, where the land is more fertile than in any part of Great Britain; and I learned there that they are laying the land down to grass, because they cannot afford to grow wheat. As a remedy for this state of things, they are establishing agricultural societies in the different states, and the legislature is providing funds to support these societies, and for the diffusion of knowledge. The central society is in Albany, and to it the different branches send reports. The legislature publish these in one thick volume, and circulate 20,000 copies gratuitously throughout the states. This central society asked me to give their annual address at Syracuse, and a course of lectures before the legislature at Albany. These lectures are to form part of this year's report; and the legislature have resolved to print an additional 20,000 copies, making 40,000 altogether, and to circulate them gratuitously through the different states. Let us now come to another point of great importance, and to which you would perhaps like me to advert, viz: what will be the effect of an improved condition of agriculture in America upon us, what influence will the growth of wheat in the states have upon us, or what influence is the progress in agriculture, consequent on this great desire for improvement, likely to have upon the state of agriculture in Great Britain? In New Brunswick, New England, Vermont, New Hampshire, Connecticut, and New-York, the growth of wheat has almost ceased, and it is now *gradually receding farther and farther westward.* Now, when I tell you this, you will see that what I believe to be the case is really the case—that it will not be very long before America will be unable—in *fact the United States are unable now—to supply us with wheat in any large quantity.** If we could bring Indian corn into general use, we might get plenty of it; but I do not think that the United States need be any bugbear to you. I believe the great source of competition you will have to contend with is the Baltic, and the countries on the borders of the Black Sea. Now, in regard to the other point, viz., what effect will the desire for improvement in agriculture have upon the agriculture of this country, it ought to stimulate us to still greater exertions. Sure I am, that with proper exertion, we will always keep ahead of them. There is as good blood

* In a late English paper we note the following: "*American Produce.*—The American line-of-packet ship, Sir Robert Peel, from New-York, has brought 15,942 bushels of wheat, 4,000 barrels of flour, and a general cargo; and the packet-ship American Eagle arrived in the docks on the same day from New-York with 3,850 barrels of flour, 602 casks of oil-cake for cattle, and a general cargo of American produce. The ship Patrick Henry brought 4,315 barrels of flour; the Atlantic, from New-York, 880 packages of cheese; the M. Wheeler, from New-Orleans, 883 barrels of flour; and the Shenandoah, on the same day, from Philadelphia, 8,410 bushels of Indian corn, 269 boxes of cheese, 500 barrels of flour, and 100 packages of beef, the produce of the United States." 13,498 bushels of American flour, 15,942 of wheat, and 8,410 of corn, all in one day. But when all expense of transportation, agencies, &c., was paid, we should like to know how much remained to the American farmer and shipper. No wonder the growth of grain is receding to the West, and will not pay there. We should like to see an account sales of all this American flour; but much as it is, we have imported, in the shape of *iron alone*, in the last twelve months, probably more of provisions than the amount of all our exports of provisions for consumption in England during the same time. Could the English people, operatives in manufactories, who consumed all this flour, be forced by a protective tariff to come and manufacture the same things in our own country, they would get three times as much pay, and would of course consume three times as much of the products of the land. We say of course, because the whole wages of labor are always invested, in some form or other, in that which is produced by the land. If the mechanic saves money enough to build a house, those who build it lay out their savings in what comes from the land—in clothes or provisions, in china or iron, or wooden tools and utensils.

Thanks to the ultimate force of *truth*, it is beginning to blow off the fog in which politicians have enveloped these questions, and the people are beginning to see on which side their bread is buttered; and once they do see it, farewell to that policy which, as General Jackson said, had held us too long in subjection to the "policy of British merchants."—*Edit. P. L. & A.*

in this country as ever went out of it. I hope English and Scotch heads and hearts will not become languid and dull on a matter of such moment as this, but that we will continue to beat them, as I am sure, from what I have seen, that we are able. What the Americans can do well, we ought to be able to do better. (The learned professor sat down amid *great applause.*)

One thing we may assert in favor of southern Farmers, that it cannot be sweepingly asserted of them, as it is by Professor Johnston, of the Farmers in the State of Maine, where, speaking of northern Farmers, he says, "they were all in a state of bankruptcy. The *land is all mortgaged*, which hangs like a mill-stone round their necks, and is *worse even* than the state of Farmers in this country"—[England.]

By the bye, it would serve essentially to illustrate the actual condition of the agriculturists of the great State of New-York, and to let us see how much there is of sour milk, underlying the cream that is exhibited at the great "Shows," if, along with their statistical returns, to be taken in 1855, there could be a report of the *number and extent of farms under "bond and mortgage,"* and the amounts due on them. We have been told, that a single millionaire in the City of New-York, in the time of a money crisis some years since, realized $150,000 by the snap judgments allowed by the law, and inexorably enforced by him, under the "Bond and Mortgage" system of that state. It is much better to know the naked truth in such cases, than to have it guessed at, sometimes exaggerated, and more often suddenly revealed in a way that leaves to the debtor no redemption. Well would it be too, if, as a nation, we were not in like manner coming under bond and mortgage to foreigners for the enormous importations of iron and cloth, and crockery and haberdashery, that we are constantly importing, and that we ought to make at home out of the products of American farms—$2,000,000 within a few days, by a single steamer! At all events it is ever well that Farmers should remember their liability to be observed and criticised by agricultural as well as other tourists. Let them be ever on the *qui vive*, for it may happen, much oftener than they suppose, that one might truly repeat to them,

"If there's a hole in a' your coats
I rede ye tent it;
A chiel's amang ye takin' notes,
And faith he'll prent it."

ON CHARRING WOOD.

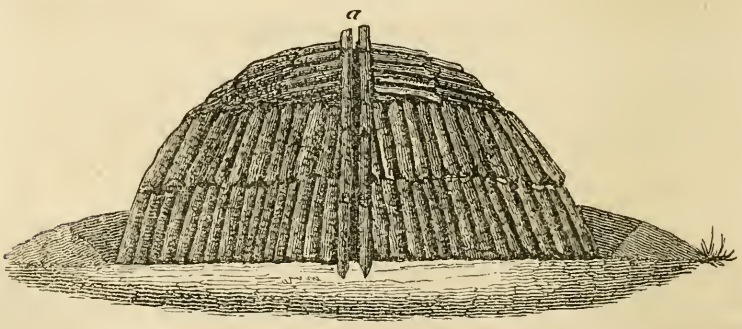
In many places we are aware that the process of charring may be familiar to the reader, while in others it may be unknown. We therefore take the substance of what follows from a valuable work, entitled "The Manufacture of Iron, in all its Various Branches," by Frederick Overman, and published lately in Philadelphia, by Henry C. Baird, successor to E. L. Carey.

CHARRING WOOD, IN HEAPS OR "KILNS."

To build a kiln, a dry, sandy, and, when possible, a level spot, nearest the wood, is selected, protected as much as may be from wind and gales. The earth is to be levelled and dug, to remove stones and stumps, and sufficiently large to permit, if practicable, the building a kiln of 30 feet diameter. A circular space of from forty to fifty feet diameter will thus be required, to be cleaned off and thus prepared. Great care should be

taken that no spring, or water of any kind, is in the neighborhood of the spot thus selected, and that it be exempt from danger of being overflowed by sudden gusts of rain water. When the ground is levelled and pounded as solidly as possible, the hauling of the cord wood should be commenced, to be piled perpendicularly around the hearth or level. When a small boy, on a farm which drove a mill, a blacksmith's shop, a distillery, a tannery, and some other things for the convenience of the neighbors, we remember to have watched Abraham Foote, a faithful and ingenious *black*-smith, when employed in the important and curious work of *building his coal kill.* As directed in the able work we have mentioned, he commenced by ranging the heaviest billets of wood around the centre, at first perpendicularly, and then gradually in a slanting position, by turning the butt, or thickest ends of the wood, downwards. The wood should be put as closely together as possible, that it may be brought into the narrowest space. In the centre, Abraham (we almost fancy we can see him now) built a small triangular pen, with little billets of wood, about the length of an axe-handle, into which the fire was to be put and kindled, when the kiln should be finished; and when the light rubbish in the pen and the adjacent wood was fairly on fire, so as to ensure continued combustion, the top of this little chimney was covered with leaves and sods of earth, like the rest of the kiln. When the wood is all piled, the whole should be covered as tightly as the surface of it can be made, with small limbs, chips, &c., to fill up the crevices; in fact, the whole pile must be made as smooth and tight as possible. The kiln should then be covered with leaves, or straw, about two inches thick, and then with sods of earth, turning the grass side next to the leaves. The annexed drawing, Fig. 25, represents the appearance of the kiln when ready to be covered, except that where a pen is made in the centre, as described, and as is commonly done by country blacksmiths; there will be no appearance like the two sticks up the middle of this engraving:

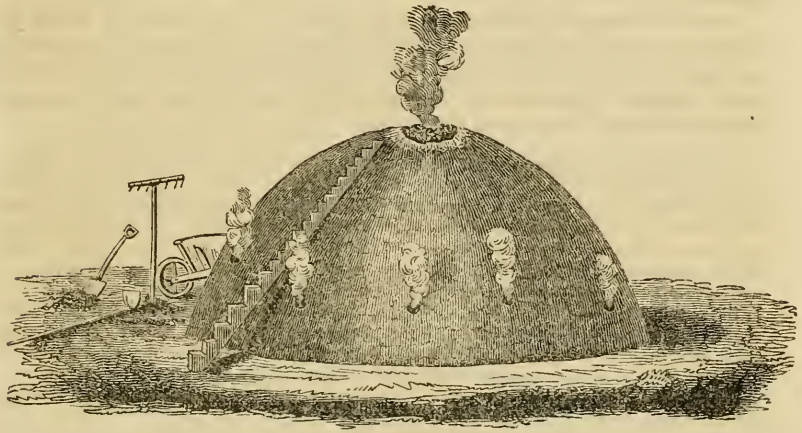
Fig. 25.



After the whole kiln, with the exception of a few feet at the top, is covered by a slight coating, the fire may be kindled at the bottom of the pen in the centre, by means of chips or charcoal, and must be watched until it is fairly started. After it has burned some hours, the whole may be covered and closed; and here the skill of the collier or smith is brought into requisition, and much too depends on the kind of wood to be charred. Pine and dry wood will permit more time, but young wood, saplings, hickory, and maple, are said, in this book, to require closing very soon, or the kiln will get too hot, and a great deal of coal will thus be wasted. Chesnut and poplar, especially the former, which abounded

on the farm, where when a boy we have often seen the work performed, was the favorite, if we remember, with Abraham Foote, the *black*-blacksmith, for making coal. If the work has been carefully and well conducted, the cover sinks gradually and regularly, and it can be gradually increased as the smoke ceases to issue from the sides of the kiln. After smoke altogether ceases, the whole kiln may be closely covered and left for cooling, which will be finished in a few days, and in the meantime the drawing of coal may be commenced. This is done by raking the dust off from the coal, at the foot of the kilns; but caution must be used not to open too much of the kiln at once, for fresh coal, even when black and apparently cold, is very apt to rekindle, and be burnt to ashes and wasted. Sometimes it will happen that the top sinks, or that the fire is not properly kindled. In this case, the workmen must get on the very top of the kiln. That this may be done conveniently, a rough stairs, or ladder, is made of a round stick, six or eight inches thick, as shown in Fig. 26:

Fig. 26.



In case the cover is too heavy, or in case the fire draws on one side, a circumstance which in stormy weather frequently happens, the hot places should receive more covering, and in the cold parts holes should be opened by removing the dust, or by running the end of a stick through it, to let in some air. If the kiln is too cold at the base of it, holes should be made all round, that the fire may draw to the bottom.

The great object is to keep up a regular *smothered* fire, and so to manage the whole process as to prevent such an accession of air, at any point, as to *kindle the wood into a blaze*, and thus reduce it to *ashes*, instead of charring it. For like reason, the same precaution is to be used in charring peat, and in burning clay.

We want to hear more of the great peat-bed, running across, we believe, from the Governor's Bridge, on the Patuxent, to the Severn River in Maryland. We once saw something in the "Annapolis Republican," the practical results of experiments of Col. Sellman, founded on the scientific suggestions of Doctor Higgins, the State Geologist, which we should be glad to get, if the editor could send it to us, unless it has been since superseded by more extended and exact experiments. These are cases that open new and promising fields for discovery for practical uses, and we shall ever be glad to follow and harvest for public account, what science may suggest and practice verify.

The well known fact that charcoal composes an essential part of all plants, and the anticipation that charred wood and *peat*, are destined to attract much attention, as cheap and convenient fertilizers in many localities, fully warrant, as we apprehend, the attention we are bestowing on the subject. Why not, for example, charr the wood that is now altogether destroyed in clearing new lands? Who is prepared to say that much of the pine wood, which is now brought by thousands of cords to the southern cities, may not be more profitably converted on the spot where it grows into charcoal, especially since mineral coal is now brought at such a low rate, by rail-roads and canals, coming every day more and more into use, as fuel in families as well as in factories? At all events, in our own conception of duty to the agricultural community, if we must repeat it, we consider it incumbent on us to throw every ray of light we can on the means of increasing in any form the productiveness of *capital in land;* and the best way, in our judgment, to do that, is to show how the surest and best market can be provided for whatever the land produces.

Since writing the above, we have received the following from the President of the Highland Agricultural Society of Ohio, and can venture to promise that it will receive due attention from Col. Wilder, who is never happier in the midst of his vocations, than in throwing light on the interests of the Plough and the Spade:

In one of the numbers of your paper a brief notice of some experiments made by Col. M. P. Wilder with charcoal upon land was given. The notice was too brief to be of farther practical use than drawing the attention of your subscribers to the subject. You would do a great service to the people of such portions of the community especially as still have an abundance of timber, by eliciting from Col. Wilder a full account of his experiments, with such practical suggestions as his intelligence and knowledge of agriculture would enable him to give. We have the evidence upon almost every farm in the county in which I live, of the effect of charcoal dust in increasing and quickening vegetation. The spots where charcoal pits were burned 20, and some say even 30 years since, still produce better corn, wheat, oats, vegetables or grass, than the adjoining lands.

What men need to know, is the probable amount to the acre, the time of sowing it upon the land, the mode of preparing the charcoal, and the best condition for the land to be in when it receives the charcoal dressing. The soil in this region of Ohio (the dividing ridge between the Scioto and Miami River) is generally a strong yellow clay, based upon limestone.

I addressed Col. Wilder upon this subject some months since, but mistaking his residence, directed my letter to Boston. By calling his attention to this subject, you may elicit from him something that will not only be useful to young farmers like myself, but may induce even older men to apply the lessons which nature has been teaching them for so many years, through the spots where charcoal pits have been burned, but which still need the aid of intelligent experiment, such as I understand Col. Wilder has made, to teach us the best mode of profiting by this agent.

In haste, with much respect, your most obedient, WM. H. TRIMBLE.

ENCOURAGEMENT FOR WOOL GROWERS IN VIRGINIA, ALABAMA, GEORGIA, MISSISSIPPI, TEXAS, AND OTHER SOUTHERN STATES.

[*Extract from the sixth edition of a work on the Present State of the Wool Trade.*]

"The wool produced in Australia *acquires* a remarkable degree of softness—superior to that of any other kind. This *has been proved* by the comparison of fleeces shorn in England from sheep which were afterwards *sent out to New South Wales*, with fleeces from the *same sheep* shorn twelve months after their arrival, and sent there to *ascertain the fact;* and cloth of the finest quality that has ever been manufactured in this country has already been made from it."*

We should be glad if some gentlemen making purchases of fine wooled sheep in the north would supply Mr. P. A. BROWNE, of Philadelphia,

* Minutes of evidence before Parliament *passim.*

with samples of their wool, taken before they are removed—and with samples shorn twelve months after they have reached their southern pastures. The fact stated above is one of much interest, and suggests experiments that must go far to illustrate the capacity which is otherwise eminently possessed in our Southern States for sheep husbandry. But why make experiments upon the *wool*, at the same time that we are making such deadly political experiments upon our *woolen factories*, and this too by the vote and influence of these same Southern States! Are they not biting off the nose to spite the face? An English writer, of intelligence and candor, says, "the consideration of sheep husbandry on a large scale involves the inquiry as to *shearing*. In Spain, a man will shear 25 fine wooled sheep in a day. Where an animal is wounded, the part is anointed with its own excrements, or with a mixture of linseed oil and resin. The shearing ceases about 3, P. M., that the sheep may have time to feed. But in that country the sheep-shearers are a class who make that their peculiar business. They are shorn in large buildings constructed for the purpose, called *Esquileos*. It has been asserted, that at one of these, in Segovia, 800,000 have been shorn in one season."

We should suppose that the Indian and his squaw, or the Mexican half-breed, would make capital shepherds; cheap and watchful. We have been so well assured, that we doubt not the fact that the Mexican shepherd's dog is put, when a pup, to be suckled by an ewe. While the flock ceases to be afraid of him, they are quickly alarmed at the approach of any strange dog, and the foster son of the ewe contracts for her and her companions a filial attachment, that prompts him to do prompt battle in their defence against all enemies.

MR. CLAPP'S SYSTEM OF FARMING.

In the Greenfield (Mass.) American Republican of the 25th November last, some very striking observations were made on the "high system" farming, as practised by Mr. Clapp, who took a lot of seven acres and 100 rods of ordinary land, and soon brought it up to produce 43 tons and 594 pounds of hay. The editor after allowing—

For manure, - - -	$100
For extra labor, - -	14
For gathering the crop, -	45
Expenses, - - -	90
Value of land, - -	75

an acre, &c., proves that Mr. C. must have made 25 per cent.; and then goes on to ask, very pertinently:—"Now cannot a farmer afford to invest money at this rate? How much does he get when he cuts only a ton or two tons even from an acre, allowing nothing for manure? And especially, if we take the average, as shown by the returns of a ton per acre, and less, how much do farmers gain by low tillage, by the skinning system? It would seem as if they could not afford to farm it on that plan, when less acres well tilled, will gain much greater profit, and less labor."

The reason why cultivated farms do not more generally improve, is the difficulty with which their owners can be persuaded to lay out a good *portion of the money* received from their produce in manure and implements. They cannot bring themselves to restore a part of the plunder. The oftener a man is robbed on a journey, the less he will have for each robber he meets—so it is with land that is robbed of its fertility.

How different with the merchant. From year to year, he adds his gains to his stock in trade. How much more safely may the farmer appropriate the whole, or a large portion of his sales to the enrichment of his land, for there he has a safe bank in which to make his deposits. Neither fire can burn up, nor storms overwhelm it. He does not even need insurance, while the merchant may adventure the accumulated gains of a life time, and lose all in a single voyage by a merciless gale, or an unexpected war; by the dishonesty of agents whom he is obliged to trust, or the rapacity of pirates by sea or land.

Farmers must make up their mind then to invest a good portion of what they make in direct advances to their land. In this there is no risk. It is of all means the surest for compound increase of profits. Nothing but the force of ill-founded prejudice prevents it.

We rejoice to learn that the farmers of Queen Anne's and other counties in Maryland and Virginia are fast overcoming old habits, and beginning to see, that for laying out their profits, there is no savings'-bank so reliable and unfailing as by putting the proceeds of their crops, (after indispensable appropriations for debts and necessaries,) in *bags of guano, and banks of lime.* Let them go on to do that, and they will make their "calling sure!" Such mastery over prejudice and over themselves and their old habits of thought and action, will do them more good, and their estates more good, than looking at sleek stallions and fat cattle. But it was truly said by Chesterfield in one of his letters to his son, when dwelling on the requisites of a popular orator:—"All have *senses to be gratified;* very few have *reason to be applied to.*" It is this which makes it more popular to give a premium for a fat calf than for a learned essay—which leads men to lend their attention to a coop of singular fowls, and refuse to lend it to the most instructive address, as we lately witnessed at a certain cattle-show, not a thousand miles from Philadelphia.

SOUTHERN CONVENTION OF MINERS AND MANUFACTURERS—AT RICHMOND.

We give another of the Reports made to the Convention, and in our next will preserve, as we do this one, for ready reference, the remaining Report on Cotton and Woolen Manufactures.

Here we see the people of Carolina, meeting to-day to determine on some method of giving value to the products of their industry, and they conclude that it is to be done, with most certainty, by *diminishing their products.* To-morrow, we see the people of Virginia meeting to deplore that the policy of the government stops their factories and furnaces, at which, if protected, they would be large consumers of cotton and corn and beef—and, strange to say, the politicians of both states teach the people to cry for free trade, under the effect of which, produce of every sort is diminished; even the produce of the plough diminishes with the diminution of consumers. Oh! what a wise, what a wonderful people we are!

REPORT OF THE COMMITTEE,

On Mining and Manufacturing in general.

The committee to whom was referred the subject of general productions and manufactures, report to the convention:

That their attention has been drawn to many articles of interest and value, some of them very important in their extent and character, and susceptible of being made largely conducive to the wealth of the country.

The article of salt is one of these. There is now manufactured annually in the county of Kanawha alone, about three million bushels, which finds a market in the western and southwestern states, producing at the average price upwards of $900,000 per annum, and requiring in its manufacture four or five millions of bushels of coal, and the labor of not less than fifteen hundred persons, and for packing the same 450,000 barrels, at a cost of about $115,000. In addition to which may be added the cost of transportation, say $100,000, and the employment of a large number of boatmen, and workmen in the foundries, copper works, &c., which supply the works with machinery and other articles incident to the production of salt.

In the counties of Washington and Smyth there are now between three and four hundred thousand bushels of salt annually produced, and the quantity may be increased to an unlimited extent, and at a cost not exceeding 12 to 15 cents per bushel.

Lead also exist, and has been mined to some extent, in the county of Wythe, but the production is now confined to the wants of the immediate neighborhood, but could be increased to an indefinite extent.

Copper ores are also found in several counties, and may hereafter, by the encouragement of the copper manufactories of the country furnishing a market for them, become a source of much wealth, besides adding immensely to the consumption of our coal. At present the principal article of copper manufacture is admitted free of duty, and the supply of the country thereby given to the foreign mines and manufactories. The consumption of copper in the United States now amounts to upwards of three millions of dollars per annum, about one-third of which is imported from England in sheets, *free of duty.*

In addition to the facts above stated, your committee would remark that there are various other branches of manufacture that have been seriously injured under the tariff of 1846—separately not of such importance as those articles which have been more prominently brought before the notice of the convention, but in the aggregate of material importance to the industry of the country, among which we name Alum, Copperas, Epsom Salts, Chrome Yellow, Bichromali and Prussiate of Potash, Blue Vitriol, White Lead, and various other chemical preparations, also Glass and Linseed Oil. A small addition to the present rates of duty would establish the manufacture of these various articles.

SPICER PATRICK, *Chairman.*

THE WELSH FARMER—IN ENGLAND AND AMERICA.

North Wales—*Statistics:*—Population 396,320, in 1841. Acres of arable land, 380,000. Pasture land, 988,000. Woods and waste land, 502,560. Total of land, 2,044,160. Of what county in our own country can these statistics be given, with equal precision? Yet should Governor Johnson's and Colonel Haldeman's views in Pennsylvania, as to an agricultural bureau, be carried out, it will soon be so, as to Pennsylvania; and ought not every state to have the means of knowing such palpable sources of its strength and wealth? But our purpose, when we took pen in hand, was to present the following picture of the condition of agricul tural population of North Wales.

We are prompted to this because we find there are in our country, immigrants enough from that, to have given rise to the *publication of several Welsh* papers in the Welsh language. The one in New-York is entitled—"*Y Cyfaill.*"

Now the American farmer may judge, how much the condition of these worthy people is improved, and how wise it would be, by adequate encouragement to our own industry, to bring, in like manner, as we might do, millions instead of thousands of people, from all parts of the world to be *good customers* here, for all that American industry can produce, to be disposed of.

The extract we make is from an able Prize Report, awarded by the Royal Agricultural Society of England, to Thomas Rowlanson, for the best "*Report on the Agriculture of North Wales.*"

Wages—taking the qualities of the servants into consideration, are high: I would rather pay double the wages to a Lancashire servant, either male or female, than I would to a Welsh servant; they are generally crammed with conceit, stubborn, &c.; and those who have not seen farming in England, fancy all the knowledge the English have of agriculture is derived from them, when in fact they are a century behind the English. Show them a good short-horn beast, they will say, not good, not black; show any of the improved breeds of pigs or sheep, their remark would be—of pigs, that their ears are not long enough, their ears ought to cover their eyes, so that they cannot see, then they will fatten: but if their ears are short and cock up, they can see everything, and it is impossible for them to fatten. Their remarks about sheep are quite as ridiculous; mind, these remarks do not apply to Flintshire and Denbighshire; these counties border on England, consequently the inhabitants are a little more civilized. Men's wages—head ploughman, living in the house, from £9 to £15 per annum, according to the size or respectability of the farm; 2d ploughman, £6 to £9; ploughman out of doors, finding his own meat. 20d. per day. The average quantity a man will plough in a day is not more than half an acre; and in mowing they will not get over much more ground, besides doing their work very imperfectly. Shepherd's wages from £6 to £12 living in the house; cowman's wages £5 to £8, living in the house; lads from thirteen to eighteen years, from 30s. to £4 per annum, according to strength and ability. Women's wages—head dairy-maid, from £6 to £8; 2d dairy-maid, from £4 to £6; other female servants, from 30s. to £4, according to age and ability. All the women-servants work in the field when required, at such work as planting and gathering potatoes, and at harvest-time, loading or spreading muck, or turning and stacking turf.

The rents in this country are high, particularly on small farms, where, what with rent and poor-rates, I hardly know how they contrive to live; but live they do, but very hard; for dinner you will see a small farmer have half a salt herring, with potatoes and butter-milk (very poor food for a working man); his wife and family must content themselves with butter-milk and potatoes; or perhaps, after the father has finished his part herring, there will be a scramble amongst the youngsters for the bones to suck as a treat. I forgot to mention that they sometimes have a little skim-milk cheese with oaten-bread. Some better off than others, muster bacon; yet the amount of poor and county-rates these men pay per annum will amount to from £4 to £5 each; in fact, the paupers live better than these men. The cloth they wear they weave from wool of their own growing, both men and women; the men a kind of frieze, and the women linseys.

ON FENCES—BY JAMES WORTH.

Thirty years ago, a paper was read before the Agricultural Society of Bucks County, with which we were so much impressed, that we preserved it in the American Farmer—and for the same reason, now re-produce it.

At first view the reader may be inclined to say, if practicable, why has it not been carried out? Might not the same thing be said about things of the most undoubted utility, which are yet almost altogether neglected? Why does not every farmer raise a nursery and plant an orchard of good and choice fruit trees? Why does not every farmer provide his wife with a good dairy house and suitable utensils for it; and good cows and good feed for the cows? Why does not every farmer take care to have a good strawberry bed, and good grape vines, and a good ice house and plenty of ice, as every one might do, but which thousands neglect to do?

The cost of fencing in our country costs more than all the other improvements put together. In Prince George's County, Maryland, men will give $50 a thousand for chesnut rails, yet not plant a single chesnut to raise timber, because, as in the case of orchards, they would require attention and care, and after all, they *might not live* to see them grown to maturity! But hear Mr. Worth:—

Before I enter upon my ground, I will take a brief view of the several kinds of fences which have come to my knowledge. The worm fence is generally made in new countries where timber is plenty; but as timber fails, the post and rail, and other kinds are resorted to, it will be unnecessary to take the former into calculation, as it is not applicable to this neigh-

borhood. I then estimate that three rails of chesnut or cedar, and post of white oak or chesnut, with ditch, will cost from 60 to 67 cents per pannel; four ditto, ditto, with bank, about 67 cents; five ditto, ditto, 75 cents; five ditto, ditto, with lime and sand posts, from 87 to 100 cents; wire fence, with wood posts, about 100 cents; stone ditto, where stone is plenty, from 100 to 125 cents; live fences or hedges, with protecting fences, about 75 cents. Bank or sod fences have not sufficient data to calculate cost, or utility.

Messrs. White & Hazard, the inventors of the wire fence, calculated, that by substituting live posts, that is, by planting trees of proper kinds, at suitable distances, an immense profit would be produced, which they considered as yielded by the fence, when, in fact, it was solely applicable to the soil—because in the exact proportion as those trees produced, would the borders of the field be exhausted—and, by sowing the seeds too near them, an additional wastage would take place; thus it is with hedges—they seem to be cheap in the first instance, but the exhaustion of the soil alone would, in my opinion, render them a very dear gift; nor do I believe they will be found so durable, as has been imagined—for I am told, that a grub has already attacked one species of the thorn; and I have often sassafras, cherry, and other trees, with abundance of grass growing along the hedge rows, which will most assuredly bring on a decline, in the course of a few years; besides I have never seen a hedge that was proof against hogs. I admit that they might be kept in better order, but it will be expensive, and require more attention than our farmers are willing to bestow. Upon the whole, I am surprised that this species of fencing should have been introduced amongst us in the present state of our country, and can only attribute it to the prejudice of foreigners, who have been accustomed to it from necessity. With respect to lime and sand posts, I believe a patent has been obtained for making them. Small stones are generally mixed with the lime and sand—they look neat and appear substantial, and will probably answer a good purpose where the materials are cheap; but can only be put up in dry weather—and it will be necessary to dig a foundation to guard against frosts.

Where stone is plenty, that kind of fence could be made to advantage, especially along waters and banks; but for general purposes, the post and rail is to be preferred to all others—three or four rails in height will do very well along woods where it is necessary to have a ditch to cut off the roots of the trees, to prevent their effects upon the adjacent fields, or in any situation where a ditch is wanted; four rails, with a bank thrown up about a foot high, is sufficient for most purposes; but it requires continual care to keep up the bank, and it occupies too much ground, nor can the borders of the field be kept entirely clean; this is the kind that I made choice of, in improving my farm—but I am now convinced of my error, and decidedly prefer the five rail, because it occupies less ground than any other and is more easily kept clean.

Having determined in favor of the post with five rails, for general purposes, I turn my attention to that particular kind, and will proceed to provide for its future supply, in the following manner, to wit: plant an acre of ground with chestnut and locust seeds, five-sixths of it with chestnut for rails, and one-sixth with locust for posts.—I calculate that four trees will grow on a perch, making six hundred and forty on the acre—I suppose that forty of them will fail, leaving six hundred trees; that each tree will produce in thirty years, and every twenty or twenty-five years afterwards, twenty rails or posts, which will yield at each cutting, twelve thousand posts and rails, or two thousand pannels—then say that the acre of land is worth eighty dollars, it will reduce the materials to four cents per pannel, which, with making and putting up, will not exceed twenty-five cents, and in point of durability, I am persuaded that it will be exceeded by none, except the stone, and it will have an advantage over it, by being moveable when necessary—but it may be said that my calculations are extravagant; reduce the product if you please to one-half, and you only add four cents per pannel to the fence. Now, I ask can any cheaper or better plan be devised? If there can, I hope it will be produced; for my object is to advance the interests of Agriculture—and, if even the exposure of errors should be the means of exciting others to engage in the good work, my purpose will, in a great degree, be accomplished. I submit the above observations to the consideration of the Society—and am respectfully,

Your obedient servant,

(Signed) JAMES WORTH.

Thomas G. Kennedy, Esq.
Secretary Ag. Soc. of Bucks Co.

The World's Exhibition—so called—for the Particular Benefit of John Bull.—220,000 superficial feet of floor and counter space appropriated by the Committee is 200,000 feet short of what has been demanded. They have notice of 8,200 exhibitors

THE DOG AND HIS DISEASES.

"Love me, love my dog" is an adage so common that it may be supposed to have its root, as it ought, in every man's heart. While animals, among themselves seem to be devoid of sympathy, and insensible to each other's joys or sufferings, every moralist has had recourse to the dog's fidelity and devotion to his master, his children, and his property, to illustrate the beauties of these social virtues, and the obligation to practice them. Shall man be less christian than his dog, that returns benefits for injuries? What man of feeling can witness the mortal suffering of any dumb creature—much less such as arise from sores and sickness contracted in his own service, without desiring to administer the appropriate remedies? Hence the obligation of every farmer to learn what he can of the anatomy and diseases of horses, dogs, sheep, and cattle; and if the readers of this journal fail to obtain the best information extant on these subjects sooner or later, it shall not be the fault of the editor.

In one of his visits to the editor of this journal, then conducting the old "*Turf Register*," (the first work of its kind in this country, and which he had founded,) the celebrated John Randolph was at once welcomed and fondled upon by two beautiful coach dogs, a present from our friend the late Gorham Parsons of Mass. Fearing they might incommode him, a movement was made to drive them off, which Mr. R. promptly checked,

saying—"Let them be, sir, let them be; dogs always know, if men do not, how to distinguish between friends and foes!" Be that as it may, certain it is that well bred dogs have an instinctive antipathy to dirty, ragged, vagabond characters, but, superior to rich nabobs, sometimes not so well bred, dogs know how to discriminate between the *unfortunate* and the *dishonest*. Argus was the first to recognise Ulysses, in rags as he was. But we must not forget that on this subject our pen is apt to run wild, and so we return to the *diseases of the dogs*, about which and their cure, we suppose every gentleman would like to be well informed. The treatise before us lays down rules for the treatment of *hydrophobia*, which we omit, believing that, as in the case of farcy in the horse, there is no *reliable remedy*, and that in both cases, the best and most merciful remedy is the *prompt administration of a bullet in the brain pan.*

To a question as to the nobility of the horse and the dog, and their comparative claims on our regard, a lady, with that nice sense of discrimination which belongs to the sex, said—"Ah! the horse is the faithful *servant* of man, but the dog is his *friend!*"

The dog is liable to so many diseases, that to attempt to treat of the whole, though briefly, would far exceed the limits assigned us: the following however, are of so much importance, and of such frequent occurrence, as to require particular notice.

Distemper.—For the following important information on the treatment of the distemper of dogs, we are indebted to Mr. Youatt's interesting paper, read at the Veterinary Medical Society, January 14, 1830.

The distemper is clearly a disease of the mucous membranes usually commencing in the membrane of the nose, and resembling nasal catarrh. In the early stages it is *coryza*, or nasal catarrh: but the affection rapidly extends, and seems to attack the mucous membranes generally—determined to some one in particular, either by atmospheric influence or accidental cause, or constitutional predisposition. The fits arise from general disturbance of the system, or from the proximity of the brain to the early seat of inflammation.

We may be assured that there is, and can be no specific for a disease like distemper. The circumstance most connected with our success will be the recollection, that it is a disease of the mucous surfaces, and that we must not carry the depleting and lowering system too far. Keeping this in view, we must accommodate ourselves to the symptoms as they arise.

In distemper, whatever be the form which it assumes, an emetic is the first thing to be given. *Common salt will do when nothing else is at hand;* but the best is the following:

Emetic for the Distemper.

Take of Calomel } of each from half a grain to
Emetic Tartar } one grain and a half.

This will act first as an emetic, and afterwards as a gentle purgative. Then, if the cough be urgent, and there be heaving at the flanks, and the nose be hot, a moderate quantity of blood may be taken—from three to twelve ounces; and this, if there has been previous constipation, may be followed by a dose of sulphate of magnesia, from two to six drachms. In slight cases, this will often be sufficient to effect a cure.

If the dog still droops, and particularly if there be much huskiness, begin to give antimonial or James's powder, nitre, and digitalis, in the following proportions:—

Fever Bolus.

Take of Powdered Foxglove, from half a grain to one grain.
Antimonial Powder, from two to five grains.
Nitre, ... from one scruple to a drachm.

Palm oil or linseed meal, sufficient to form a bolus, which should be given twice or thrice in a day; except that on the third or fourth day, if the huskiness be not quite removed, the emetic should be repeated.

In these affections of the mucous membranes, it is absolutely necessary to avoid or to get rid of every source of irritation; and there will generally be found one, and a very considerable one, in young dogs, worms. If we can speedily get rid of them, distemper will often rapidly disappear; but if they are suffered to remain, diarrhœa or fits may supervene; therefore some worm medicine should be administered.

Vomiting is very easily excited in the dog; and on that account we are precluded

from the use of a great many medicines in our treatment of him. Calomel, aloes, jalap, scammony, and gamboge, will generally produce sickness. We are, therefore, driven to some mechanical vermifuge; and a very effectual one, and what will rarely fail of expelling even the tape-worm, is tin filings or powdered glass. From half a drachm to a drachm of either may be advantageously given twice in the day. They should be added to the digitalis, James's powder, and nitre, made into balls with palm oil and a little linseed meal. This course is to be pursued, in usual cases, until two or three emetics have been given, and a ball morning and night on the intermediate days.

This is the only febrile stage of distemper if much fever ever accompanies it. Should the huskiness, after the first two or three days, not diminish, and the dog not rapidly lose flesh, it will be advisable to take a little more blood, and to put a seton in the poll; using the proper seton needle, and not the barbarous red-hot iron of the farrier. It should be inserted between the ears, including as much of the integument as possible, and, indeed, reaching from ear to ear. When there is fever and huskiness, and the dog is not much emaciated, a seton is an excellent remedy; but if it be used indiscriminately, and when the animal is already losing ground as fast as he can, and is violently purging, it will only hasten his doom, or, rather, make it more sure.

It is now, if ever, that pneumonia will be perceived. The symptoms of inflammation in the lungs of the dog can scarcely be mistaken. The quick and laborious breathing, the disinclination or inability to lie down, the elevated position of the head, and the projection of the muzzle, will clearly mark it. More blood must be abstracted, a seton inserted, the bowels opened with Epsom salts, and the digitalis, nitre, and James's powder given more frequently, and in larger doses.

Little aid is to be derived from observation of the pulse of the dog, it varies so much with the breed, and size, and age of the animal. In the Newfoundland dog, it is about 60; in the small spaniel more than 100. The best place to feel the pulse is at the side, One very important information we may possibly gain from it, viz., whether digitalis is producing an intermittent pulse, which it frequently will do, and which we wish that it should. The digitalis should then be given a little more cautiously, and in smaller quantities.

If the pneumonia be conquered, or we have proceeded so far without any considerable inflammatory affection of the chest, we must now begin to change our plan of treatment. If the huskiness continues, and the discharge from the nose is increased and thicker, and the animal is losing flesh and getting weak, we must give half the quantity of the sedative and diuretic medicine, and add some mild tonic, as gentian, chamomile, and ginger, with occasional emetics; and take care to keep the bowels in a lax but not purging state. The dog should likewise be urged to eat; and if he obstinately refuse all food, he should be forced with strong beef jelly, for a very great degree of debility will now frequently ensue.

We have thus far considered the treatment of distemper from its commencement; but it may have existed several days before we are consulted, and the dog may be thin, and husk, and scarcely eat. In such case give an emetic, a dose of salts, and then proceed to the tonic and fever balls.

Should the strength of the animal continue to decline, and the discharge from the nose become purulent and offensive, the fever medicine must be omitted, and the tonic balls, with carbonate of iron administered.

If the discharge from the nose becomes very offensive, and the lips swelled and ulcerated, and the breath fetid, an ounce of yeast may be administered every noon, and the tonics morning and night; while the mouth is frequently washed with a solution of chloride of lime.

At this period of the disease, the submaxillary glands are sometimes very much enlarged, and a tumor or abscess is formed, which, if not timely opened, breaks, and a ragged ill-conditioned ulcer is formed, very liable to spread, and very difficult to heal. It is prudent to puncture this tumor as soon as it begins to point, for it will never disperse. After the opening, a poultice should be applied one day to cleanse the ulcer, and it should then be daily washed with the compound tincture of Benjamin, and dressed with calamine ointment. Tonic balls should be given, and the animal liberally fed.

Should fits appear in an early stage, give a strong emetic; then bleed, and open the bowels with six grains of calomel and a quarter of a grain of opium; insert a seton, and afterwards give the tonic balls.

The progress of fits in the early stage of the disease may be sometimes arrested. Two or three should not make us despair; but if they occur at a later period, and when the dog is much reduced, there is little hope; for this additional expenditure of animal power will soon carry him off. All that is to be done is to administer a strong emetic, obviate costiveness by castor oil, and give the tonic balls with opium.

In fits, and indeed in every period of the disease, the animal should be kindly treated.

Rough brutal usage will often bring on fits, and coaxing and kindness, even without medicinal aid, will sometimes put an end to them. At the moment of the fit, and especially if the dog be restive and will not be fondled, a cup of cold water dashed violently in his muzzle will frequently have an instantaneous and almost magical effect. The dog starts, looks eagerly around him, and is himself again.

Yellows.—Of the treatment of the yellow disease little can be said. Success scarcely attends one case in twenty. When good effect has been produced, it has been by one large bleeding, opening the bowels well with Epsom salts, and then giving grain doses of calomel twice a day in a tonic ball.

While it is prudent to obviate costiveness, there is nothing more to be dreaded, in every stage of distemper, than diarrhœa. This shows the folly of giving violent cathartics in distemper; and when ten, and twenty, and thirty grains of calomel are sometimes given, it is fortunate that the stomach of the dog is so irritable. The greater part of these kill-or-cure doses is ejected, otherwise the patient would soon be carried off by super-purgation. There is an irritability about the whole of the mucous membrane that may be easily excited, but cannot be so readily allayed; and, therefore, except in the earliest stage of distemper, or in fits, or the small portion of calomel which enters into our emetic, a stronger purgative than castor oil or Epsom salts should never be given. It is of the utmost consequence that the purging of distemper should be checked as soon as possible. In some diseases a sudden purging, and even one of considerable violence, constitutes what is called the crisis. It is hailed as a favorable symptom, and from that moment the animal begins to recover; but this is never the case in distemper; it is a morbid action, and soon produces a dangerous degree of debility.

The proper treatment of distemper-purging is first to give a good dose of Epsom salts, to carry off anything that may offend, and then to ply the animal with mingled absorbents and astringents. The following bolus may be advantageously administered two or three times a day:—

Astringent Bolus for a Diarrhœa or Purging.

Take of Powdered Chalk, from one to two drachms.
Catechu . from one scruple to a drachm.
Opium . from one-eight to a fourth of a grain.

To be made into a ball with a small quantity of palm oil. The stomach will not always bear even the small quantity of opium above prescribed, in which case recourse must be had to opium under another form—the syrup of white poppies—which may usually be given in doses from a scruple to a drachm, without producing sickness. Injections of these medicines, suspended in thin gruel, may be administered with advantage. If they do not restrain the flux, they will relieve the straining and tenesmus which almost invariably accompany distemper-purging.

Of pervention, little can be said. Good feeding is the best preventive. A growing dog, and until he has had the distemper, should have nearly as much as he will eat. The distemper will try the strength of the best-conditioned animal, and a half-starved whelp is sure to perish.

THE EUROPEAN AND AMERICAN RAILWAY.

BY JOHN G. FAIRBANKS.

Woodside, Halifax, Nova Scotia, 18th Dec., 1850.

J. S. Skinner, Esq.

Dear Sir:—I am a constant reader of your very able and useful publication, the "Plough, the Loom and the Anvil," and have ever been an advocate of those principles of protection which its friends seem to have adopted, and which its opponents have hitherto in my opinion, in vain endeavored successfully to controvert.

This, I trust will serve as a sufficient excuse for the liberty I now take in addressing one, with whom I have not the pleasure of a personal acquaintance; and were it not from the fear of interrupting labors so usefully employed, I should long since had added the testimony of my approval to the long list of those who thinking as I do, have preceded me; but I have another motive. I desire if possible to aid the circulation of a work containing views and principles so sound and practical, that wherever they are adopted, their beneficial influence on the prosperity of the

people must very speedily manifest itself. There are two other very important subjects in which the inhabitants both of the United States and these Provinces are deeply interested, and I hope I may not be deemed too presuming should I venture to suggest that the occasional introduction of an article in allusion to them would not only prove acceptable to many of your readers, but secure the result I anticipate in extending your subscription list. I refer to the *European and American Railway*, and the proposed *Reciprocal Trade* between our respective countries, and hope that some notice of them may not interfere with plans or engagements you have already entered into or deem of higher importance. I think it however, as well previous to further reference to those subjects, to make you in some degree acquainted with your correspondent, in order that you may justly appreciate the motives by which he is actuated in these suggestions.

I am a native of Halifax, to which my father removed from Connecticut shortly after the Revolution. He brought with him that spirit of enterprise, and those habits of industry and mechanical skill, for which his countrymen are usually distinguished, and I may say the example he set, was not lost on his sons, who have not only filled various public situations, but have been rather conspicuous in opening up the resources of the country, clearing land, building mills, &c., and in various ways striving to advance the improvement of this new and rich country. I have myself been for thirty years engaged in mercantile pursuits, and for the last twelve have changed them for those of agriculture, which, always more congenial to my taste, induced me to purchase the small farm on which I live, of about one hundred acres, which I have improved and ornamented to some extent. Here my leisure is occupied in reading with avidity the various agricultural productions of the day, and yours with especial interest, attending to the duties of a Legislative Counsellor and those of President of our Central and Provincial Board of Agriculture; to these was added the representation of the views of our citizens at the Portland Convention in August last—they having done me the honor to associate me with the Attorney-General and Mayor for that purpose. I should have avoided these details, were I not desirous of proving to you, that both in my public and private capacity, it is no less my duty than my interest and pleasure to watch the course of public opinion, to seek information wherever I can find it in order to found a correct judgment, and to the best of my humble ability to aid in the diffusion of those principles that promise with most certainty to insure the effective application of our industry, and increase the amount of comfort, wealth and intelligence so essential to the progress of every civilized community.

I now turn to the subject of the Rail-Road, and will endeavor to convey shortly, some of the ideas which are in my mind associated in connection with this great enterprise. Halifax, owing to its noble harbor, accessible at all seasons, its favorable position in a direct line with Liverpool and New-York, its population and advantages as a military station, its relative position to the neighboring colonies, abundant supply of coal, &c., has been selected as the first place of arrival for steamers on this continent. From Halifax also, lines of telegraph communication, extend to remote sections of the Union and of Upper Canada. Those admirable adaptations of science, are daily exhibiting their effects on the intercourse of nations; extending themselves so rapidly, that the present arrangements will very shortly be quite inadequate to meet the demands for public accommodation; influenced by these considerations, our enterprising neighbors in Maine while busily engaged in completing their

connections with Canada, and through their own state on the seaboard, have not been indifferent to the manifest advantages of a connected line through our Provinces to Halifax, across the Ocean Ferry to Ireland, thence to the continent of Europe.

No sooner was the project announced than it aroused the dormant energies of our people, and the colonial spirit was manifested in the enthusiastic support of the scheme, proved beyond all doubts by the readiness with which they accepted the invitation, and the energy they exhibited in favor of the object of the Convention. The most distinguished citizens of the Union in 100 letters, approved of the undertaking. Maine promptly granted a liberal charter, and completed a survey to the frontier. New-Brunswick opened its subscription list; Nova Scotia is prepared to do her best, and has sent Mr. Howe, the Provincial Secretary, an able and zealous advocate, to London to solicit the aid of the Imperial Government. He has been favorably received, and we daily expect such intelligence, as will insure effective legislation in its support during the winter. The citizens of Galway have also a respectable delegation in London, making arrangements in connection with it. Should this road be completed, scarcely a doubt exists that passengers from hence, will reach Boston in twenty, New-York in thirty hours in advance of the steamer; and travellers will largely avail themselves of its accommodation both ways; it will increase the value of all existing intermediate lines; extend commercial intercourse between the two countries, and essentially benefit both. Maine wants our coal, iron and other valuable domestic productions; we want her skill, enterprise and manufactures. The habits of the people are daily assimulating; prejudices dispelling, and the desire for more intimate and friendly intercourse on the increase. In these days when by the instrumentality of steam, a man can live longer, that is, accomplish more in a given time than he could at any former period, society will not be satisfied till distance and time are compressed within the narrowest limits. A case occurred a few days since. The British Mail-Steamer Asia made her signals to our light and passed on; had she come in or even met a boat, her news would have preceded her arrival in New-York by perhaps sixty hours. I do not think this state of things will much longer exist, even your own citizens will find a remedy.

I trust the foregoing remarks will serve to convince you, if you have not been so hitherto, that this is a work of such commanding importance as to entitle itself to the notice and advocacy of every public journalist on both sides the Atlantic. If I am not misled by the excitement of my own mind, or mistaken as to the great social advantages it will produce, I cannot be wrong in thinking it will be a legitimate, popular and profitable subject for discussion in your pages. John A. Poor, Esq., A. C. Morton, C. E., at Portland, are among the warmest advocates of this work; the latter has recently been with me; he has just traversed the whole line preparatory to making a report on it to the legislature of Maine, and informs me that there is not a single engineering difficulty on the whole route from Portland to Halifax. Either of these gentlemen would, I am sure, most cheerfully furnish you with any information you might seek relative to it; and I need scarcely say that I should be most happy to do the same.

The residue of this letter, relating to *reciprocity of trade with Canada*, will appear in our next. Our readers are not ignorant of the light in which we regard the proposition; but as our object in all things is *truth*, and our aim the welfare of the agricultural interest of our country, it would be equally against our rules, and our notions of what is right, not to let both sides be heard! We had not room for the whole of the letter in this number. It was not even easy to get in what we have given with much pleasure.

PRICES CURRENT.

FROM THE NEW-YORK DRY GOODS REPORTER.

COTTON.—On Saturday last the accounts per steamer Niagara were received, and the same being considered very favorable, caused an active enquiry here at an advance of a ¼ a ⅜ c. per lb., at which advance there were large sales, principally for shipping and speculation. Our spinners are buying only for immediate wants, and the stocks in their hands must be extremely light. The stoppage of a 1,000,000 spindles, which number has been ascertained to be stopped since the 22d September, 1850, has tended to keep the price of Cotton down at least 1½ a 2 cents per lb.

Freights to Liverpool $1 per bale ; to Havre, 3-8.

	Uplands.	Gulfs.
Ordinary, to good ordinary, -	13¼ a 13½	13⅜ a 13⅝
Middling to good middling, - -	13⅞ a 14⅛	14¼ a 14½
Middling fair to fair, - -	14⅜ a 14⅝	14¾ a 15
Fully fair to good fair, - -	14¾ a	15¼ a

FLOUR, MEAL, &c.—Duty : 20 per cent. *ad valorem.*—The inquiry for flour is moderate and the speculators are rather shoving off their stock. Prices are a shade easier than last week. The market closes with but little life. Canada is dull at $4 87½ in bond ; the sales of Domestic are 15,000 bbls. at the following rates : No. 2, superfine, $4 43¾ a $4 62½ ; common state, $4 81¼ a $4 87½ ; straight do., $4 87½ ; favorite do., $4 93¾ ; mixed Wisconsin, $4 87½ ; mixed Indiana, Ohio and Michigan, $4 87½ ; pure Genesee, $5 06¼ a $5 12½ ; good Ohio, $5 ; southern has been in fair demand mostly for export to Liverpool and the West Indies at steady prices at $5 06¼ a $5 12½, for Alexandria, Richmond, Baltimore, Brandywine, Georgetown and Petersburg, and $5 75 for fancy brands.

GRAIN.—Duty : 20 *per cent. ad valorem.*—Wheat continues to be offered very lightly by holders, and prices in consequence are firm, the sales making over 16,000 bushels prime white Canada at $1 12½ in bond, and 1200 prime Long Island, $1 04 for milling.

Rye is scarce but in moderate demand as distillers are fully supplied ; the sales are at 75 c.; Barley is nominally 90 c. ; Oats are scarce and in few hands, prices are advancing—Canal and Canada, 55 a 56 c. ; River, 52 a 53, and Jersey, 46 a 48½ c.

Corn continues in very small supply, the stock of old is nearly exhausted and new comes forward lightly ; prices are in consequence on the upward tendency ; the sales are 45,000 bushels at 69 c. for new yellow southern ; 70 c. for old and new mixed ; 73 c. in the slip for new white do. ; old round yellow, 70 a 71 c. ; Canada and American white Peas in a small way, at $1 18 a $1 20.

HAY.—Duty : 20 *per cent. ad valorem.*—Is quiet with sales of 1200 bales at 70 a 75 c. for shipping, and 80 c. for city use. North River, in bales, per 100 lb., 65 a 88¾ c.

HEMP—Duty : *Russian and Italian.* 30 *per cent. ad valorem; Manilla, Jute and Sisal*, 25 *per cent. ad val.* Sales of 2000 bales Manilla, and 100 tons dressed dew rotted American on private terms ; 30 tons Hemp Yarns just received, sold before.

American Dew-rotted, -	$105 a 120	Russia, - -	$205 a 200
" Dressed, -	145 a 185	Jute, - -	75 a 80
" Water-rotted, -	190	Sisal, - -	8½ c. a 9
Manilla, - - - -	10 c.	Italian, - -	210 a 220

IRON—Duty : 30 *per cent. ad valorem.*—Is steady with sales of 500 tons Scotch Pig at $21 a 21, 25, 6 mos., afloat and in yard ; 150 tons English Refined Bar from yard $47 50, 6 mos., and 200 T. & F. Norway from yard, and 600 packs Russia Sheet on private terms. Holders of English Bar Iron are firm at $40.

Pig, Scotch, per ton, - - - -	19 25 a 20 50
Bar, English refined, - - -	50 — a — —
Do. do. common, - - - - -	38 — a 38 50
Sheets do. - - - - - -	— 3¼ a — —
Swedish, - - - - -	81 — a 81 50
English Hoop, - - - - -	4 — a 5 —

DOMESTIC WOOL—*New-York, Jan.* 10, 1851.—In our last week's report, we omitted some important sales, say 200,000 lbs. of ¾ a full blood at quotations. This would reduce our estimate of stocks in like quantity though even this aggregate, 1,500,000 lbs. of all grades is thought by dealers to be too large. We notice since our former issue, sales of fleece to the extent of 40,000 lbs. mostly of half Merino. For extra fine Saxony, 55 c. has been offered and refused, and we hear of sales of sup. pulled at 45 c.

In pulled we notice sales of 75,000 lbs. at quotations mostly in small lots for immediate consumption. The present state of the Goods market is as unfavorable for the producer of Wool as can be reasonably expected for some time to come, and therefore there can be no risk to the farmer in an increase of sheep, as at present prices the clip of Wool would be the most profitable investment the agriculturist could make.

Amer. Saxony fleece,	50 a 55	No. 1, pulled country,	34 a 35
Full blooded Merino,	45 a 50	Super pulled city,	37½a —
½ and ¾ Merino,	40 a 43	No. 1, pulled Lambs,	33 a 34
Super pulled country,	39 a 40		

TOBACCO—Duty: *Leaf and unmanufactured*, 30; *manufactured*, 40 *per cent. ad valorem.*—Is in fair demand with sales of 100 hhds. Missouri at 11¼; 100 Kentucky, 8½ a 12½; 50 Maryland and 7 a 8½; 100 bales St. Jago, 21 a 25; St. Domingo, 15; 200 Havana, 36 a 50; 20 cases Connecticut, 18 tierces and 101 bales Laguany on private terms on the low grades Leaf, as before noted, some decline has been submitted to, owing to the anticipated preponderance of these qualities in the coming crop. In manufactured, there has been but little doing of late, but holders are firm in demanding extreme fall rates; the sales of the past year are estimated at 143,500 packages; of the past month, 4400. Stock, Jan. 1, 1851, 24,600, against 16,000 in 1850. Cuba continues in request, and Havana is held firmly, but St. Domingo is neglected. Stock, in first hands, 1535 bales Cuba; 1711 do. Havana; 1266 St. Domingo, and 441 Alabama. Seed leaf has as yet come forward sparingly, and is in but little request, except for export. Florida is less sought after than formerly, and the prices obtained this season are below the average of the past three years. Stock, 600 cases. Messrs. T. & H. Messenger, in their circular for the Baltic, (to whom we are indebted for most of the above,) estimates the crop of Kentucky, Tennessee and Missouri for 1851, at 55,000 hhds. Virginia, 30,000, Maryland, 22,000 and Ohio, 16,000—together, 123,000 hhds.; that of 1850 was 143,300, and the average for ten years past, 161,140 hhds.

Virginia,	per lb, 7 a 10½ c.	Havana, Fillers and Wrappers,	18 a 75
Kentucky,	" 7¼a 13	Florida Wrappers,	15 a 60
Mason County,	" 11½a 15	Connecticut, Seed Leaf,	16 a 20
Maryland,	" 6¾a 9	Pennsylvania, Seed Leaf,	10 a 20
Cuba,	" 19 a 24		

TO CORRESPONDENTS.

The press of valuable matter, much of it coming in late, has occasioned us to omit many things that, bearing the season in mind, may not be well postponed beyond the next month. A friend has placed in our hands the Proceedings of the Winyau All-Saints Agricultural Society, containing a very interesting correspondence between the Hon. J. R. Poinsett and Col. Abert, the learned head of the Topographical Bureau; and a Report on the Cultivation of the Sweet Potato, by Dr. Sparkman. All these are highly worthy of being more widely diffused, as they will be in our pages, over the whole Union, when we command the space.

Then a friend in Massachusetts has sent us excellent practical essays on the Cultivation of the Onion, the Pear Tree, the Cranberry, and the Apple. All these will be preserved for our readers as fast as we can find room. That on the Apple would have been preferred to the one we give in this number, if we had seen it before the latter was in type.

The Castor-Oil Bean.—A correspondent's (at Fairfield, Alabama,) wishes in reference to this plant shall be attended to. It attracted our notice, and directions were given for the culture and the preparation of the oil, thirty years ago; but his letter was received when all for this number was in type.

Our friend at Halifax, Nova Scotia, who subscribes for five copies of this journal, will find the first half of his letter in this number. It was rub and go to get it in. What he says of the Canada reciprocity bill shall certainly find a place. It would be altogether inconsistent with our practice and principles to condemn any measure, and then not to let the other side be heard. *That* is not *our* way!

Peat Charcoal.—The friend who asks for further information about this, is advised that we are fully sensible of its importance, and had given out an essay on the uses of peat, with costly engravings, to show the method of charring it, but had not room for it in this number.

An example of liberality and just thinking.—A correspondent in Alabama says: "I have occasionally seen and got copies of the 'Plough, the Loom, and the Anvil,' and though I am a good democrat, I am not opposed to any one advocating their own opinions, if they differ from mine; and as your work contains valuable and interesting statistical matter, and very much general information upon all agricultural business, I am willing to become a subscriber for at least one year. Therefore please put my name on your books, and send me a receipt for $3." Now that's acting like a sensible man! What a monotonous life this would be if all thought alike on all subjects. The slaves of party demagogues (no matter of what party) are always afraid to inquire; the lover of truth never. And none but fools arrogate infallibility to themselves, where there is any room to doubt. In the love of "*free trade*" we too profess to be democracts; but the question is, *the way to arrive at it?* This country is not now in a position to maintain free trade against countries that have prepared themselves to beat us, by a thousand years of close monopoly. How can we exchange the raw products of *hand*-labor against the pauper and the machinery labor of Europe? The thing is out of the question. In such a contest—*we must go to the wall.* Let any one willing to come at the truth, read the letters we have published from Mr. Carey. He too is a free trade man, but he respectfully challenges the head of the free trade party to show, that protection is not the only road to it for our country. The public will sooner or later become convinced of this. Democrats themselves will see that it is the only means to reach their end. The dispute then is not about the object, but about the way to arrive at it. The democratic party is right in contending for free trade, but it is only by the ruin of the country, and not even by that, that they can achieve it, if they abandon the protection of American industry at present. You might as well expect a naked Indian chief to contend in single combat against General Scott, armed with Colt's Revolver and a Toledo blade!

GERMAN HOT-BEDS.

Take white cotton cloth of a close texture, stretch and nail it on frames of any size you wish; take 2 oz. of lime water, 4 oz. of linseed oil, 1 oz. white of eggs, 2 oz. of yolk of eggs, mix the lime and oil with very gentle heat, beat the eggs well separately, and mix with the former—spread this mixture with a paint brush over the cotton, allowing each coat to dry before applying another; until they become water proof. The following are the advantages these shades possess over glass ones:

1st. The cost being hardly one-fourth.

2d. Repairs are easily and cheaply made.

3d. The light. They do not require watering; no matter how intense the heat of the sun, the plants are never struck down or burnt, faded or checked in growth, neither do they grow up long, sick and weakly as they do under glass, and still there is abundance of light.

4th. The heat arising entirely from below, is more equable and temperate which is a great object. The vapor rising from the manure and earth is condensed by the cool air passing over the surface of the shade, and hangs in drops upon the inside and therefore the plants do not require as frequent watering. If the frames or stretchers are made large, they should be intersected with cross-bars about a foot square to support the cloth. These articles are just the thing for bringing forward flower seeds in season for transplanting.

The Plough, the Loom, and the Anvil.

Vol. III. MARCH, 1851. No. IX.

THE PROSPECT:

AGRICULTURAL, MANUFACTURING, COMMERCIAL AND FINANCIAL,

AT THE OPENING OF THE YEAR 1851.

BY HENRY C. CAREY.

Is there any one so insensible to the influences which ought to animate every well-informed, free American cultivator of the soil, as to admit that he feels no concern in "the causes" of the progress and decline of industrial communities? and more especially, such causes as affect the interest of his own calling and country? To such, if there be any, we shall make no further explanation as to the reasons which have prompted us, in the management of this work, to accompany elucidations of the *practice*, with dissertations on the *political economy* of agriculture.

As eminently adapted to this purpose, the contributions of Mr. Carey to our pages, have attracted the notice and approval, not only of many of the wisest of our own country, but of the most distinguished political economists of Europe.

In the January number of Blackwood's celebrated "Edinburgh Magazine," the Editor, in a review of the "Harmony of Interests," written for this journal, says,—

"Mr. Carey, the well-known statistical writer of America, has supplied us with ample materials for conducting such an inquiry; and we can safely recommend his remarkable work to all who wish to investigate the causes of the progress and decline of industrial communities."

In referring to the disappointment of the Free-trade League in England, who had counted on "*American reciprocity*," the same writer says,—

"What is there wonderful in this? Was it likely that a country, *possessing within itself the raw material in abundance*, and, so far as cotton was concerned, having a virtual monopoly of its growth, should *for ever refuse to avail itself of its natural advantages*, and to stimulate agriculture by giving it that *enormous increment of consumption* which must arise from the establishment of domestic manufactures? Does not common sense show us, that the nearer the point of exchange can be brought to the exchanging parties, the more advantageous and profitable to both parties must that interchange necessarily become? Unquestionably it is for the interest of the American planter to have the manufactory brought as close as possible to his plantation, seeing that thereby he would avoid the enormous charges which he bears at present, both in land carriage and freightage—charges which, of themselves, go a great way towards the annihilation of his profit. Add to this, that those charges on the raw material necessarily enhance the price of the fabric when converted by British machinery, and again transported to America; and it must become evident to every one, how largely the American planter is interested in the foundation and success of American manufactures.

"The interest of the agriculturist is equally great. For him, a steady market at his own door, such as extended manufactures alone can give, is the readiest and most certain source of wealth and prosperity. What he wants is regular consumption; and the nearer the customers can be found, the greater will be the demand, and the more profitable the supply."

[*Ed. of P. L. & A.*

CHAPTER V.

THE TARIFF OF 1846.

The year 1846 brought with it a great change in the commercial policy of the country. The advocates of the policy erroneously called "free trade," asserted that the effect of the tariff of 1842 had been—

First, to divert labour and capital from pursuits that did not need protection to those that did need it, and thus to diminish the return to both.

Second, to raise the prices of foreign commodities, and thus enable the domestic producer of similar ones to impose a tax upon the consumers for his especial benefit, and thus diminish the power of the labourer to obtain food and clothing.

Third, to diminish the market for food and cotton, wool and tobacco.

These views were either true, or they were not. *If true*, the return to labour and capital should have increased regularly and steadily from 1846 to the present time, and at a rate more rapid than that of the increase from 1843 to 1847. If only *partially untrue*, the rate of advance should have diminished. If *absolutely and wholly untrue*, labour and capital should be now less productive of commodities for the use of man than they were in 1846.

If true, the power to consume cloth, and iron, and fuel, should have increased at a rate more rapid than it had done under the tariff of 1842. If *absolutely untrue*, the power to consume those articles must have diminished since 1846.

If true, the people of the Union should now be to the farmers and planters of the Union far better customers than in 1846, consuming more food and cotton. *If absolutely untrue*, they must have become poorer customers to those farmers and planters.

If true, they must have had so much more to sell to foreign nations as to enable them *to pay for more* of their productions. *If absolutely untrue*, they must have had so much less to sell that they have become able to pay for less of those productions.

I would now beg the reader to study carefully the above, and satisfy himself that such is the mode of testing the charges against the policy of 1842: and I am the more anxious for this, because it is so difficult to hold the advocates of the theory known by the name of "free trade" to any thing like a fair exposition of their views of what constitutes "prosperity," and what it is that we should have reason to expect from the working out of their principles. The great end in view, I understand to be that of finding the system of policy under which labour and capital produce most commodities, enabling the labourer and capitalist to consume most and have most to sell, thus increasing trade within and without the nation. This is, as I conceive, the true test of any system of policy. By that I desire the tariff of 1842 to be judged, and by that I ask the reader to judge the tariff of 1846.

In various cases a diminution of production has long since become obvious, but they are ascribed to "over-production," an idea that had its origin in the errors of the English politico-economical school. So long as the people of the world shall continue to be unable to obtain as much food, cotton, wool, cloth, fuel, and iron, as is required for the satisfaction of their *utmost and most unreasonable desires*, there *can be no over-production*, except that which results from inability, on the part of those who desire to consume, to produce commodities to be given in exchange. The farmer desires to exchange his food for cloth, fuel, iron, books, or newspapers, but the market is glutted with food, and he is compelled to dispense with much of the cloth or iron he would have desired to purchase. Were he now to inquire into the cause of this "glut" of food, he would find it to result from a diminished demand for labour, to be applied to the production of cloth and iron. The labour of the class of artisans, miners, and furnace-men had become less productive, and *therefore* they were compelled to become poorer customers to the farmer. The planter desires to obtain food, cloth, or iron, for his cotton, but the market is "glutted," and he is compelled to diminish his purchases. He becomes a poorer customer to the mechanic, because the mechanic is a poorer customer to him. Increase the demand for food, and the farmer will become a better customer to the planter, the mechanic, and the miner. Increase the demand for cotton, and the planter will become a better customer to the farmer and the mechanic. Increase the demand for iron, and the furnace-man will become a better customer to the planter and the farmer. The existence of "gluts" is an evidence of great error in the system under which

they are produced. Their absence is evidence of soundness of the commercial system under which they are not produced. In the year 1845 and 1846 there was no glut of cloth, or of iron. Consumption was immense, because of the vast increase in the power to produce food to be given in exchange, and there was no other glut of food, or of cotton, than that which resulted from the fact, that the then rapidly growing consumption, checked during the previous period of "free trade," had not yet overtaken the supply. There is now a "glut" of cloth, and of iron, and of a thousand other commodities, because the ability to produce food, cotton, tobacco, rice, and other products of the earth is now less than it was four years since, and there is consequently less to be exchanged against cloth and iron, as I shall now have occasion to show.

In 1842, the domestic production of iron was but little more than 200,000 tons. In 1847 it was 800,000. A similar rate of growth would give, for the present year, at least a million and a half of tons. It has, however, fallen to less than half a million, and there is reason to believe that it does not exceed 400,000. If so, production has diminished 400,000 tons in three years, whereas it increased almost 600,000 in five years, and notwithstanding this wonderfully diminished production, the market is "glutted," while every farmer and planter in the nation is anxious for more iron roads, and labourers are everywhere idle for want of machinery.

Has the deficiency been made up by importation? In reply, it will be sufficient to state, that the import of 1849 exceeded that of 1846 by only 230,000 tons, and that of 1850 by only 270,000 tons, the total import having been only 352,000; and that, while every ton produced and imported in 1846 found immediate demand, because men were everywhere producing things to be given in exchange, in 1849 and 1850 the market was everywhere "glutted," because of an inability to produce things which the producers of iron were willing to receive in exchange for it. So far as regards iron, then, the anticipations of the framers of the tariff of 1846 have failed. Instead of a more rapid increase of the power of consumption, it has greatly diminished, and a "glut" has been created where none before existed, the consequence of which is, that miners and furnace-men are unable to obtain the necessary supply of food and clothing. Had the tariff of 1842 remained unchanged, the product of 1846 would now be doubled, and we should be consuming a million and a half of tons, without any suggestion of "over production." As it is, from day to day we learn of the stoppage of further furnaces, and with each such stoppage the "glut" increases, and *must continue to increase*, because the power to produce commodities to be given in exchange for iron must decrease more rapidly.

We have now before us the astounding fact, that, while we are straining all our energies to purchase iron on credit, and are going in debt at the rate of almost a million of dollars per week, the actual consumption of this important commodity, with a population of probably *twenty-four millions*, is less than it was with a population of *twenty-one millions*, and that the difference is not less than twenty-five per cent. Under four years of protection, consumption trebled, *and we paid off much debt.* Under four years of "free trade," it has diminished one-fourth, and we are going in debt at a rate that must speedily make us bankrupt. It would be difficult to find in these facts any evidence of the truth of the positions of the opponents of the tariff of 1842.

Whenever and wherever the consumption of iron increases, the power of production increases, and the condition of man tends to improve. Whenever and wherever the consumption of iron diminishes, the power of production diminishes, and the condition of man tends towards deterioration. Iron is the great instrument of civilization.

In 1842, the domestic production of anthracite coal was 1,108,000 tons, being little more than it had been several years before. In 1847, it was 3,030,00 tons, having almost trebled in five years. A similar rate of progression would give now above six millions of tons. The last year gave, however, only 3,127,000, and, notwithstanding the consumption by steamers, the market was "glutted," the consequence of which was, that miners were unable to obtain food and clothing, and the market for both was greatly diminished.

The price has risen, because of the increased demand for steamers, and diminished supply consequent upon the destruction of the facilities of transportation, thus producing a diminished power of consumption among the people. The deficiency has not been made up from abroad, for the import of 1848 exceeds by only 52,000 tons that of 1846, and that of 1850 by 24,000 tons.

Now, it is clear that the power to consume fuel increased with great rapidity from 1843 to 1847. Why has it not only not increased with similar rapidity, but actually diminished in its ratio to population, in the period which has since elapsed? Certainly not because the people were before too well warmed, but as certainly because the power to produce things to be given in exchange has diminished. The men who cannot sell their labour to be employed in the production of cloth or iron, are unable to purchase fuel.

The domestic consumption of cotton in the year 1841–2, was but 268,000 bales, while of that grown in 1847, it was 600,000 bales. Of that grown in 1848, it was still about 600,000, to wit, taken for the Atlantic ports, 531,772 bales, and consumed in the interior, 75,000, making a total of 606,772

Of that grown in 1848, the former was 518,039, and the latter 110,000, making a total of..... 618,039*

While of that grown in 1849, the first has fallen to 487,769, and the second to 107,500, or a total of..... 595,269*

Of the new crop, the quantity taken from the Atlantic ports, from Sept. 1, to Nov. 1, was 50,963 bales, against 74,775 in the previous year; and there is reason to believe that the consumption of the year from the Atlantic ports cannot exceed 400,000 bales, nor that of the whole country 500,000, although the population has increased *at least ten per cent.* since it had reached 600,000.

At the ratio of increase that was exhibited from 1842 to 1847, we should consume in the coming year almost a million of bales, whereas it will not exceed half that quantity; and yet this effect has been produced by measures adopted by men who believed that the domestic consumption of their great staple was impeded by the action of the tariff of 1842. If they were right, why has it not increased even faster since the change? The productiveness of labour should have increased, and the power of consumption should have grown, whereas, it has greatly diminished, *in actual quantity*, notwithstanding the increase of population. It would seem clear, that there has been a diminished power to produce commodities to be exchanged for cotton, as the mills and furnaces of the Union have gradually been closed. The men who cannot make iron, or mine coal, or convert cotton into cloth, cannot buy cloth.

We may now look to see if we can find in the increased imports, any amends to the planters for this wonderful diminution in the growth of the domestic market, which cannot be estimated at less than 300,000 bales. In the two years, ending June 30, 1846, the average import of foreign cottons, was $13,681,000

In that ending June 30, 1847, it was..... 16,072,000

* Quantities given by the New York Shipping and Commercial List.

While in that ending June 30, 1849, it was only..... 15,180,000
In that ending June 30, 1850, it has been..... 19,895,000

Under the tariff of 1842, the import of foreign cottons had nearly doubled in amount, having risen from little more than seven millions in 1842, to thirteen and a half in the year which preceded the passage of the tariff of 1846, and above sixteen in the year of which the first half was under the regime of 1842. The growth of the power to import fine cottons has, therefore, diminished with the diminution of the power to produce at home the coarse ones. This, however, is not all. Large as was the domestic production of cotton goods, the average export of the year 1845 and 1846 was under four millions, while that of the year ending June 30, 1848, was $5,718,000

That ending June 30, 1849, ... 4,933,000
And the last year,..... 4,734,424

Deducting these quantities from the imports, it will be seen that the *net* import of the period of protection was nearly *ten* millions, while that of "free trade," with an increase of population of above three millions, has only reached fourteen, the ratio of growth having *greatly diminished*, although we have gone in debt, during the last year, almost a million of dollars per week.

It is obvious that, with the *diminished power* to convert cotton into cloth, there is an *increased necessity* for looking to foreign countries for a market for our diminished product, and that this necessity steadily increases. In the first two months of the present crop-season, the cotton taken for home consumption had *decreased* one-third, while the export of cotton goods in the single month of October, from the port of Boston alone, is stated to have so much increased as to have reached nearly half a million, being one-third of the whole amount since January.

It would seem from this, that the power to consume cotton goods, domestic and foreign, which had doubled in the years of the tariff of 1842, has actually fallen off *in quantity*, notwithstanding the addition to our population of nearly three millions of people, showing that the power to produce commodities to be given in exchange for cotton cloth, is not as great in amount as it was then. Trade has diminished, and has become less free, because it is *necessity*, alone, that causes this increase of exports.

If we now desire to know the cause of this, we need only turn to the fact that the production of iron, which should have grown to almost a million and a half of tons, has fallen to 400,000—that the production of coal, which should have grown to six millions, has remained stationary at three—and that throughout the country the mass of the cotton mills are stopped, or running short time; the consequence of which is, that the operatives can buy little food, and have nothing to spare for clothing. In the neighborhood of Boston, 300,000 spindles are stopped. In Rhode Island, 71 factories are closed. In New England at large, not less than 700,000 spindles are stopped, and must continue so. During much of the past year, they were enabled to continue running, because they had laid in their stock of cotton at low prices, but now they are stopped until there shall arise a demand for cloth that will enable them to sell it at as much as will pay for the wool, and the wages of the people who convert it into cloth. At Buffalo, large mills are closed, and so it is in other parts of New York. In New Jersey, every mill, with one exception, is stated to be closed. In Pennsylvania, some of the largest establishments are stopped, and others are working short time. In Maryland, eleven are closed; and the stoppages are spreading gradually throughout the country, ultimately to reach every State of the Union. If now, we estimate the quantity of wages that would be paid in, and for all these factories, and the shops connected with them, we shall find that it could scarcely be less

than sixty thousand dollars per week, or three millions of dollars in a year; to replace which there is nothing, for the mass of the persons that were thus employed are deprived of all employment. If next we remark the fact that all these persons, thus deprived of work, must eat, though earning nothing, we shall find that they not only have nothing themselves to spare for clothing, but that the necessity for finding numbers of them in food, deprives parents of the power to purchase clothing for themselves; and thus it is, that *with every diminution in the power to convert cotton into cloth, there is diminished power to consume the little that is made,* while *with every increase in the power of conversion, there is increased power to consume the large quantity that is made.* In 1841, the *net* import was but four millions of dollars, whereas in 1845 and 1846 it was *almost ten* millions, although the home consumption of cotton had doubled, and yet there was then no "glut."

It will be said, that the increase of the price of cotton has tended to produce this effect, but *that should have produced a contrary one;* and it always will do so, when the manufacture at home is permitted to increase. The planter is enriched by the doubling of the price upon the whole crop, and the country at large is enriched by that doubling upon the large quantity exported, and, therefore, the power of domestic consumption should grow more rapidly with a high price than with a low one. The crop grown in 1846 was less by almost one-third than the average of the two previous years, yet domestic consumption increased, and it did so because, as the price of cotton rose, the power to produce commodities to be given in exchange for cloth increased; as the cotton-growers may readily satisfy themselves must inevitably be the case, when high price results from increased demand, and not from diminished production.

In 1842, the quantity of wool delivered at Pittsburg, and on the New York canals, was..... 4,800,000 pounds.
In 1846, it had risen to 12,269,000
And in 1847 to..... 16,325,000
In 1848 it was 11,600,000
In 1849..... 17,800,000
In 1850..... 16,400,000

We have thus, notwithstanding the vast increase of population, gone back to the point at which we stood three years since. Nor is this all. There has been a very large diminution in the quantity raised nearer to market. The flocks of Vermont, and of the Eastern States generally, have, it is understood, greatly decreased.

Now, the actual increase of five years, under the tariff of 1846, was more than 300 per cent., while there is every reason to believe, that since that time, the actual diminution of production has been very large indeed. The high prices of this year have induced the sending to market of all that could be found; and the *Cincinnati Gazette* informs us, that west of that point, there do not now remain 200,000 pounds, whereas in former years large quantities remained behind. It is obvious, then, that so far as the woollen manufacture is dependent upon the supply of domestic wool it has actually diminished, while so far as it depends upon foreign wool, it has very greatly declined. The average import of foreign wool, in 1845 and 1846 was about 23 millions of pounds, the import having *trebled,* while the domestic production so greatly increased; but now that the domestic production has receded, import has also receded. The average import of 1848 and 1849, was only 14,000,000, and that of 1850 has been 18,000,000

The duty on woollen goods was reduced with a view to remove a tax which was supposed to diminish consumption, but so far as the domestic production is concerned, it is clear that the actual consumption has very largely dimi-

nished, notwithstanding an increase of numbers exceeding the total population of some important kingdoms of Europe. Such being the case, we may advantageously inquire if the import of foreign woollens has made amends for this extraordinary deficiency.

The average import of cloths and cassimeres in 1845 and 1846, was 4,800,000
That of 1849 was..... 4,995,000
That of 1850,..... 6,184,990
The average import of woollen goods of all kinds, in 1845 and 1846, was..... 10,350,000
That of 1849 was 13,704,000
That of 1850,..... 15,965,000

The average price of wool, when manufactured, is probably one dollar per pound We have, therefore, an excess of foreign manufactures equal to *five* millions, *and those not paid for*, and a diminution in the domestic manufacture equal to *fifteen* millions. It is obvious that the actual quantity of wool consumed, is less by many millions of pounds than it was three years since, although it must have doubled in the period of the existence of the tariff of 1842. The object of the change of policy was that of *increasing the ratio of the growth of consumption;* but it has not only not accomplished that object, but it has actually reduced the consumption of iron and of cotton and woollen cloths to a far less amount for a population of 24 millions, than it was under the tariff of 1842 for a population of 21 millons.

Production has diminished, and there is a glut of every thing. Cottons accumulate for which there is no demand. Woollens are languid. Iron is piled up until the quantity unsold amounts to hundreds of thousands of tons. The coal miners, as a body, would have been ruined, but for a freshet that cut off from market many of the most productive mines; and so does the "glut" make its way through society, each step providing for a new and further one. The closing of a furnace stops the demand for cottons, and the stoppage of the cotton factory diminishes the demand for iron. The late cotton operative is unable to purchase woollen cloth, and the woollen mill is closed, thereby depriving the woollen operative of the power to purchase food or clothing. Bad as it is now, we have as yet seen little more than the commencement of the operation.

If we now compare the production of iron, coal, and cotton and woollen cloths of 1847 with that of 1842, we must arrive at the conclusion, that the actual product of labour and capital, as shown in the difference between the value of the raw material with that of the manufactured articles, was greater in the latter than in the previous year, by at least, $120,000,000

If next we add the amount of labour applied to the creation of the cotton and woollen mills, the furnaces, the rolling mills, the opening of the mines, the erection of machinery, and the building of houses, &c. &c. required for this enormous increase of manufactures, we shall be safe in putting it at 30,000,000

Making a total excess of 1847 over 1842, ... $150,000,000

If now, we make a similar examination for 1850, we can scarcely fail to arrive at the conclusion that at least one-third this growth of manufacture has been lost, say 50,000,000

While throughout the country there is no demand whatever for the erection of mills or furnaces, or for the opening of mines, and, that there is here a further diminution in the demand for labour, to the extent of 30,000,000

Making an actual diminution of 1850, as compared with 1846, of no less than..... 80,000,000

If, next, we suppose that in the four years that have elapsed since the tariff of 1846 went into operation, the growth would have been no more than it was in the years from 1843 to 1847, during which the nation was slowly recovering from the effects of the compromise tariff, we should have an excess of at least..... $300,000,000

Whereas the actual increase cannot be estimated at more than 80,000,000

Making the diminished productiveness of labour $220,000,000

in these few branches of employment; and it is a very small calculation, for it is the characteristic of increased production that each year prepares the way for *a new and larger increase*, while, with diminished production, each successive year is marked by *an increase in the ratio of diminution*, gradually extending, as it is now doing, to every department of industry.

It will be said, however, that labour has been more productively employed elsewhere. How far that has been the case, we shall see, when we come to examine the productiveness of agricultural labour. We need to find there a large increase, to make amends for deficiencies elsewhere.

The population of the Union is greater at this moment, by more than three millions of persons, than it was four years since, while the number employed otherwise than in agriculture has greatly diminished. One-third, at least, of the persons employed in mining coal and ore, making and rolling iron, and manufacturing cloth, must now be either idle or engaged in raising food, and to these must be now added the whole sum of the addition to the population in the last three years, making an addition to the agricultural population of four millions, or almost twenty per cent.; and as their labours are, by the modern "free-trade" theory, more productively employed than before, *the ratio of increase* should now be far greater than it was under the tariff of 1842. What was that ratio was shown in a former chapter. (See page 31.) From 1840 to 1847, it was about *forty per cent.*, notwithstanding the diversion of population to the "unprofitable" pursuits of opening mines, building mills and furnaces, mining coal and ore, and making cloth and iron. We are, therefore, fairly entitled to find, for the last four years, an increase of *fifty per cent.* in the quantity of agricultural products.

That a large portion of these four millions of people has applied itself to agriculture, will be obvious to all those who mark the wonderful growth of emigration from the old States. Maine is losing her population rapidly.* In many parts of Vermont, there is an actual diminution.† From New England generally, emigration is large. So is it from New York, New Jersey,‡

* The population of Saco, and we may say the same respecting that of Biddeford, is less than it was a year ago, by over a thousand. Had the census been taken in June of last year, the number would not have fallen below 7000 in Saco. The stoppage of the manufacturing operations on both sides of the river has lessened our population at least 700 on each side, and we regret to say that the loss is still going on, and will not be checked until the business of manufacturing brightens. To show the loss which Saco has sustained from the cause mentioned, we will state that an enumeration made by us of the inhabitants living on Factory Island, in May, 1848, showed over 1000 persons residing there. The census of this year hardly comes up to 500. The boarding-houses then averaged 33—this year, hardly 13. The population of Saco, in 1840, was 4408—increase 1839, or 24 per cent."—*Saco Union.*

† The *Vermont Chronicle* says that the late census returns for that State show a large decrease of population in many of the towns since 1840.

‡ Owing to the stoppage of the furnaces and other iron works in four of our townships, there were nearly 400 less voters in the county than in 1844, they having moved away; at least two-thirds of these voters were Democrats.—*Sussex Herald.*

This county abounds in mineral wealth, and is close to the great anthracite coal region; yet its growth in ten years was but about ten per cent.

Pennsylvania, and even from Ohio,* and thus is labour diverted from the work of producing food, and cloth, and iron, to the making of new machines for future production. At the South, emigration is enormous.†

The increase of the COTTON-growing population, in the last four years, can not have been less than fifteen per cent., as, in addition to the natural increase, there has been a continued stream of emigration from all the Southern States to those further South and West. Merely to keep pace with the population the crop should, therefore, have grown fifteen per cent. How it has been, we may now see.

The average crops of 1842–3 to 1845–6, were	2,230,000 bales.
That of 1847–8 to 1850–1	2,300,000
That of 1849–50, was	2,096,000
And the present is estimated at only	2,200,000

The last four years prior to the passage of the tariff of 1842, gave only 1,700,000. The four which followed the passage of that act gave an increase of thirty per cent., or *double the growth of population*. The three which followed gave six per cent. increase, or about *half the growth of population*. The two last give *a reduction of four per cent.* against an increase of population amounting to fifteen per cent. The average crop of 1839–40 and 1840–41 was above 1,900,000 bales, being within ten per cent. of our present production, notwithstanding an increase of population amounting to more than thirty per cent. During the existence of the tariff of 1842, we had about a million and three-quarters of bales with which to freight our ships; but now, notwithstanding the growth of population, we should have but fifteen hundred thousand, were it not that we are gradually closing all the mills of the country, and rendering the planters gradually more and more dependent upon the ever variable market of England.

The average export of TOBACCO for the four years ending June, 1847, the period of the tariff of 1842, was	150,000 hhds.
That of the two years ending June 30, 1849, was only	116,000
That of 1850 has been	145,729
The Virginia inspection for the first four years of the tariff of 1842, averaged	50,000
That of 1848–9 was	44,904
That of 1849–50 was only	41,926

The crop of that State now coming to market is estimated at only 30,000 and the total crop of the Union is likely to prove so short that it is doubtful if the export will reach 120,000 hogsheads.

We have here a most remarkable decrease of production, and decrease of

* The *Lancaster Gazette*, published in Lancaster, Fairfield county, Ohio, gives some details of the census in that locality, from which it appears that seven townships of the county, containing in 1840 a population amounting to 18,829, have now 18,722 inhabitants, a decrease of 107 in ten years. These are all the townships heard from, but the Gazette remarks:

"From what information we have from the remaining townships, it is altogether probable that there will be a decrease of population in the territory now composing Fairfield county."

† EMIGRATION.—The boats at the lower ferry are kept constantly in motion, crossing the emigration, which, as the season advances, rapidly increases. The principal avenues of our city, leading from the ferry and connecting with the southern military road, have been completely *jammed* during the past week. Upon the opposite bank of the river, so far as the view is unobstructed, one continuous train of wagons is seen slowly advancing. From information obtained, we feel confident, in saying the emigration this fall will nearly double that of last.—*Little Rock Gazette, Oct.* 18.

the power to furnish commodities to go abroad in payment for cloth and iron, followed, of course, by a decrease in the demand for ships; and this, too, occurring simultaneously with precisely the same circumstances in relation to cotton; and yet this decrease has taken place under a system which *looked to the substitution of the cultivation of food, tobacco, and cotton, for the making of cloth and iron.*

The SUGAR crop of 1845 reached ..... 200,000,000 lbs.
having almost doubled in three years. That of 1848 was 240,000,000
That of 1849 fell to..... 220,000,000
And the crop of the present year is estimated at..... 150,000,000

The average export of RICE, for the years of the tariff of 1842, was..... 130,000 tierces.
That of the two years, 1847–8 and 1848–9 115,000
That of 1850,..... 127,000
It would seem from this quite clear that the productiveness of planting labour, so far as regards the quantity produced, has greatly decreased, notwithstanding a large growth of population.

The average crop of HEMP in the four years of the tariff of 1842, for 1843–4 to 1846–7, was..... 43,900 tons.
That of 1847–8 was 21,584
And that of 1848–9 only..... 19,856*
Cotton, rice, tobacco, and hemp, the products of the planting States, are thus shown to obey precisely the same law. All rose under the protective system, and all have fallen since protection was withdrawn.

The Southern States also furnish NAVAL STORES, and as there has been so large a diminution in all other of the products, we might there, perhaps, find some compensation.
The export in the year 1842–3, was only ..... 226,406 barrels.
The average of the three following years was 415,859
That of the two years ending 1849–50, ... 394,948
And that of 1850, ... 531,944
Here is an increase, and the only one, and it is accompanied by a reducton of price, proving that the demand does not grow with the production. In 1845–6, the export was 416,746 barrels, valued at..... $1,085,712
In 1849–50 it is 531,944, valued at only..... 1,142,713
The export has increased almost thirty per cent., while the product has increased only six per cent.

To those who would desire to understand why it is that production so uniformly increased under the tariff of 1842, it will scarcely be necessary to say more than this—that the cause of its enactment was the universal ruin which accompanied the working of the compromise of 1833—that from 1843 to 1846 the population of the South applied themselves to production—and that in the years which had followed 1846, the mania for making new plantations and new roads by which to get to them, has sprung up, and is now raging with even greater force than it did fourteen years since.

* The difficulty of obtaining correct accounts of the growth of hemp is very great. The statement here given is derived from a source believed at the time it was obtained, to be authentic, but I have been totally unable in any manner to verify it.

It has been shown the power to supply FOOD in exchange for foreign commodities had grown from an average of..... $16,000,000
in the four years prior to the passage of the tariff of 1842, to the amount in 1845–6, of..... 27,701,121
The crops raised in 1846, prior to the passage of the tariff of that year, were so large that we were enabled to furnish to the world the enormous amount of..... 68,701,921
In the following year, 1847–8, it fell to..... 37,472,751
In 1848–9, the amount was..... 38,000,000
And in the last year it has fallen to..... 26,200,000
being actually less than the export of the last year that preceded the enactment of the tariff of 1846—that year in which the production of cloth, iron, and coal grew with such rapidity, and in which at least thirty millions of dollars worth of labour must have been applied to the building of mills and furnaces, the opening of mines, and the erection of mining and manufacturing machinery! It would seem to be difficult to account for these facts on the "free-trade" theory, though they are in perfect accordance with that of protection.

We are now consuming largely of foreign food, as will be seen from the fact that we imported last year from Canada,

Wheat.....	.....bushels,	1,237,855
Rye and Oats.....		598,433
Flour.....	.....barrels,	335,000

And yet it is but a short time since we were assured that we had four hundred millions of bushels of grain for which we needed a market! Deduct the food imported, from that exported, and the *net* export will be found to be ten per cent. less than that of 1845–6.

Thus far, even, the amount of export has been maintained chiefly by vast supplies of PORK, for in the last year our export of *home-grown* grain and flour *to all the world* has been only as follows: Wheat 608,661 bushels, and flour 1,335,488 barrels, the whole being the equivalent of less than a million and a half barrels of flour, showing a diminution of production to an extent that is absolutely wonderful. In the year 1846–7 it was supposed that we were about to feed Europe, to a vast extent, with Indian corn, but the last year exhibits an export *to all the world* of only 6,595,092 bushels; and yet so short is the supply of corn, that we are likely to have no pork for sale. From Ohio, Illinois, and indeed from every part of the West, we have information of the exceeding scarcity of hogs, and the price is now so high as must effectually cut off the power of exporting it in payment for cloth or iron, or for using it to find employment for our ships. So, too, is it with BEEF, another important item of our exports.* The following comparative view of the receipts at New Orleans of the various products of the West for the past two years, will show that while in no case has there been any material increase, in almost all there has been a large decrease; and yet, we have for the past three years been closing the mills and furnaces of the Union, and *driving* the whole increase of population to seek the West, there to employ themselves in agriculture.

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* *Beef and Pork Packing.*—The *St. Louis Intelligencer* says: "It is the general impression that for want of material, the business of this fall will fall short of last season."

Later accounts say that the deficiency will be equal to one-third of the crop of last year.

Year ending 31st Aug.	1849.	1850.	Year ending 31st Aug.	1849.	1850.
Bacon, packages.....	84,043	86,612	Lard, packages.....	489,847	530,385
Bagging, pieces.....	72,941	58,324	Lead, pigs.....	508,557	415,400
Beans, bbls.....	13,157	9,307	Linseed oil, bbls.....	1,409	1,098
Butter, kegs & firkins	57,972	51,058	Lard oil, bbls.....	8,840	14,712
Beef, packages.....	70,590	65,271	Potatoes, bbls.....	146,116	166,003
Corn meal, bbls.....	12,097	5,187	Pork, packages.....	587,421	573,357
Corn, sacks.....	1,706,312	1,114,897	Tallow, bbls.....	5,622	4,862
Cheese, boxes.....	54,287	62,809	Whisky, bbls.....	125,029	117,753
Flour, bbls.....	1,013,177	591,986	Wheat, bbls & sacks	238,911	57,508

If we now examine the trade on the New York canals, we find the same results. The quantity of wheat, of flour, and of some other commodities has increased because we have become the carriers of Canadian produce to a vast amount. Thus, independently of the consumption at home of Canadian wheat and flour, the export of foreign flour from New York in the last year, was 175,000 barrels, and that of wheat 184,107 bushels; but these quantities represent but a small portion of the foreign products of agriculture carried on those works.

By taking the trade from Buffalo east, we to a considerable extent exclude this cause of error, and doing so we find a great and almost universal decrease.

	1847.	1848.	1849.	1850.
Flour, barrels.....	1,857,000	1,249,000	1,207,435	1,088,321
Wheat, bushels.....	6,489,100	4,520,117	4,943,978	3,672,886
Corn.....	2,862,300	2,298,100	2,321,651	2,594,600
Oats.....	446,000	560,000	362,000	347,000
Rye.....	70,787	17,800	5,253	50
Pork and Bacon, bbls.....	63,750	66,000	80,000	66,000
Beef.....	38,900	58,000	52,000	84,000
Seed.....	22,530	22,020	21,072	9,764
Butter, lbs.....	5,079,000	6,872,000	9,714,000	5,298,000

In examining this statement it is essential to observe that the object of the tariff of 1846 was the substitution of agricultural for manufacturing labour, and that it has been done in the three past years, to the extent of hundreds of millions of dollars, giving us a right to expect *an immense increase* of raw products for sale; whereas, a large *decrease* has taken place in all except pork and beef, both of which are now to fall.

With regard to ASHES we have the same result, the amount transported in three years having been as follows:

	1848.	1849.	1850.
Barrels . . .	63,857 . . .	58,440 . . .	40,021

We have here precisely the same state of things that existed in 1837–8. We had then closed the mills and furnaces in order that labour might be compelled to seek agriculture, and yet, with an *increase* of population in the four years equal to almost three-fourths of *the whole population* of the prosperous kingdom of Belgium, so far from agriculture becoming more productive of commodities to be exchanged with other nations, it was becoming daily less so. We now produce less cotton, less tobacco, less sugar, less food, less wool, and less ashes, than we did three years since. How widely different was the case in the four years of the tariff of 1842, ending with 1846–7! Our power to export grew then from year to year, and now it diminishes with each succeeding year, rendering less and less necessary the building of ships, and increasing from hour to hour the difficulty of paying for the cloth and iron we import; and yet the avowed object of the present system was that of increasing the agricultural produce with which to pay for cloth and iron. How

long we can continue in the course of selling *less* and buying *more*, without bankruptcy, time will speedily determine.

To estimate at $100,000,000 the amount of CAPITAL applied in the years from 1843 to 1847, to the payment of labour employed in the creation of cotton and woollen mills, furnaces and rolling mills, machine shops, the opening of mines, the building of houses for workmen, is to put it at a very low figure indeed. The quantity so employed increased from year to year, and the last year must certainly have exceeded thirty millions of dollars. Next, to provide stock for those mills and furnaces, and to pay the wages of the men employed in them, must have kept in employment an equal amount.

With the passage of the act of 1846, the tendency to the building of mills and furnaces and the opening of mines diminished. As it gradually came into activity, that tendency ceased to exist. By degrees, the old mills and furnaces are being closed, and with each such operation capital becomes less and less productive, and the "abundance of money" increases, and this is regarded, by many shallow, pretenders to a knowledge of political economy, as one of the evidences of "increased prosperity."

The necessary consequence of this state of things is, that vast sums remain in bank at the credit of depositors, drawing no interest, and to be loaned out to speculators in lots and lands, railroad and canal shares, to aid in raising prices, by which *the few* may profit, while *the many* must ultimately be ruined.

The following table of the movement of the banks in the city of New York, will illustrate the course of operation that always follows the closing up of the usual modes of employing capital, and precedes an explosion :

	Loans.	Specie.	Circulation.	Deposites.
Sept., 1848	$40,097,890	$4,740,847	$5,726,891	$20,353,365
Dec. 31, 1848	41,031,247	5,850,424	5,783,498	21,443,148
Feb. 9, 1849	43,521,441	4,523,775	5,460,399	22,928,554
June 30, 1849	48,515,471	9,586,308	5,539,572	27,227,134
Sept. 12, 1849	49,922,265	8,022,246	5,990,100	28,482,228
Dec. 31, 1849	53,360,050	7,169,016	6,013,349	28,868,488
March 30, 1850	56,420,647	6,861,501	6,725,688	32,067,937
June 30, 1850	59,888,176	10,650,290	5,918,786	35,861,139
Sept. 28, 1850	62,788,151	9,056,846	6,692,063	37,010,382

Here are no less than thirty-seven millions, *yielding no interest to their owners*, of which twenty-eight millions are loaned out for the profit of the institutions with which they are deposited. As a matter of course, dividends are high, as will be seen by the following table of

Bank Capital and Profits, Boston and New York.

	BOSTON.			NEW YORK.		
	Capital.	Dividends.	Per ct.	Capital.	Dividends.	Per ct.
1845	17,480,000	1,112,100	6,36	33,084,100	1,433,901	6,21
1846	18,480,000	1,196,000	6,57	23,084,100	1,536,312	6,62
1847	18,180,000	1,281,300	7,00	23,084,600	1,572,158	7,09
1848	18,920,100	1,428,350	7,55	34,284,100	1,883,971	8,10
1849	19,280,600	1,477,350	7,66	24,457,890	1,982,998	8,10
1850	20,710,000	1,534,000	7,68	27,440,070	2,228,967	8,80

In 1846, the banking capital of both cities paid little more than 6 per cent., because there then existed a demand for capital to be employed in the building of mills and furnaces, and for a thousand other purposes connected with the progress of manufacturing industry. The *owners* of that capital *then* received its profits. Now, *they receive nothing*, while banks make eight and nine, and even ten per cent., derived from loaning the capital of others, as will be seen by the following semi-annual dividends of the banks of Philadelphia :

Northern Liberties	5	Western Bank	5
Manufacturers' and Mechanics	4	Kensington	5
Commercial	4	Penn Township	5
Southwark	5	Mechanics	6
Philadelphia	5	Farmers and Mechanics	5

We have here precisely the state of things which preceded the downfall of 1837. Banks made large dividends, derived from lending to speculators the capital of others who could themselves find no safe and profitable employment for it, and yet that system, like the present, was specially intended to diminish the power of the *few* over the *many*. How it has succeeded in accomplishing that object, the list of dividends will show. No better evidence of the unsoundness of a system, and its generally impoverishing effect, could be presented than is to be found in such a list as the one here presented. When the large and small capitalist could freely invest their savings, dividends were limited to about the legal rate of interest, and all were equal. Now that it cannot be so invested, dividends are large, and the little capitalist has nothing. This would seem to be *aristocratic*, yet it is the natural result of a tariff styled *democratic*.

The natural consequence of this "abundance of money," as it is called, is, that every man desires to avail himself of the opportunity to improve his lot, or his farm, by having a road. Legitimate trade diminishes, and every town, every city, and every county, is anxious to avail itself of the opportunity to give its bonds in payment for a road, or a bridge, or some description of "improvement" that may enable it to draw to itself the business that now goes elsewhere. Cities run races in the building of steam-ships, and the ordinary modes of obtaining capital for the purpose not being sufficient to gratify the eager desires of speculators, Congress is besieged with applications for lines of ships to all the ports of Europe, Africa, and Asia, and lines of road from north to south, and from east to west, covering the whole ground from the Lakes to the Isthmus of Panama, and from the Atlantic to the Pacific.

The whole energies of the nation are now given to *machine-making*, at an expenditure so enormous, that when the day of trial comes, as come it must, the *mania* will be regarded as fit only to be chronicled on the same page with our own of 1836, and that of England in 1846. The government is performing its part of the work by the establishment of numerous lines of ships, various regiments of troops, the grant of land for making roads, for military services, and for various other purposes, all involving a vast expenditure, or sacrifice of revenue, for the same purposes as those to which was applied the surplus revenue of 1836, and to produce *inevitably* the same results. The people are building up *machines*, in the form of new States, upon one of which, California, there has been expended an amount of labour and capital sufficient, had it remained at home, to produce cloth, iron, and other commodities, to the extent of at least a hundred millions per annum, and that result obtained without the enormous loss of life* and sacrifice of

* The letter of our California correspondent, printed on Saturday morning, and relating to the overland emigration to the new State and the prospects and sufferings of the emigrants, was calculated to produce a just, though painful, picture of the terrors of the route. When we are told that seventy thousand emigrants are this year on the road, we feel, such is the wonderful character of everything about California, scarcely disposed to be surprised, or to pause to think about the matter; but our attention is arrested and our feelings are stirred, when told that not more than one-third of this immense host can pass the Sierra Nevada before the winter sets in, rendering the crossing impracticable, and that the remaining two-thirds must therefore winter in the Great Basin, as it is called, or in those desolate regions of the

morals that have accompanied the settlement of this new state. We have established there the largest gaming-house in the world, and most of the persons who visit it, as well as most of those who send merchandize to it, are either already ruined,* or in a fair way to become so. Another such *machine* we are building up at the Salt Lake, and a third in New Mexico, while hundreds of thousands are flocking to Texas and Arkansas, Wisconsin, Iowa, and Minnesota, producing a *necessity* for the construction of new roads, and diminishing every where the *power* to improve old ones, because of the dispersion of the population, the loss of labour, and consequent diminution of production. Everywhere it is the same. The new roads make fortunes for the *middlemen* who negociate the loan, and for the happy owners of the lands and lots, and the makers of these fortunes build palaces, while the term of life of many of those fortunes is dependent entirely upon the length of time that is to elapse before it shall be discovered that banks which make large dividends at one time, must inevitably make small ones at another, when large fortunes will shrink into small ones, as was the case at the close of our former road-making mania, and the recent one of England.

It seems everywhere to be forgotten that the emigrant ceases to be a producer from the moment he leaves his farm, his plantation, his furnace, mill, or mine, and that then for a year or two he must be a consumer only. The makers of roads must be fed, clothed, and housed. So must be the settlers of California and Utah, Iowa and Minnesota, Texas and Arkansas. The palace-builders must be fed and clothed, and yet, this vast body of men produce nothing with which to feed or clothe themselves. They are producing *machines*, to be used in aid of future production, and the nation is exhausting itself in feeding and clothing them while engaged in the work. From day to day, we are producing less cotton and tobacco, less wheat and pork, less cloth and iron, less, in short, of all the commodities required for the use of man. The price of cotton goes up because, notwithstanding the increase of population, we produce scarcely more than we did ten years since. That of rice goes up because we have less to export than we had sixteen years since. That of tobacco goes up because we have less to export than we had eighteen years since. That of wheat goes up because we have almost none to export, and have become large importers of it from both Canada and Chili. That of corn goes up because we have little to spare. Pork rises because corn is scarce.

Of SPERMACETI OIL, the average receipt in the four years from 1843 to 1846, was.....140,000 bbls.
That of 1848 was.....107,876
And that of 1849, only.....100,944
Last year gave but 86,157 barrels, a reduction of *thirty eight per cent.*

Shoshoco desert beyond the Salt Lake, where, as the letter informs us, water can be sold for $10 a pint, and $700 be refused, by a trader, for "one little cup full."—*North American.*

* RETURNED CALIFORNIANS.—The St. Louis *Intelligencer*, noticing the return to that city of seventy-five Californians by way of New Orleans, says:—

From what we could learn, we are inclined to believe that a large majority return with very little money. Several had a few hundred, or perhaps thousands of dollars, but three out of five return worse off than they left, and many had not enough to defray their expenses home. From inquiry of the clerks of both boats, we are informed that a very small amount had been deposited with them for safe keeping, and it was the general impression, although the Californians were very quiet about the matter themselves, that they had not made much out of the adventure, certainly not enough to induce them to try it again. It is believed that the whole amount brought by the seventy-five or eighty men will not exceed, in gold dust, coin or valuables, $20,000, and it may fall much below this sum. They are principally from the northern part of this State, Illinois and Iowa, and expressed much anxiety to get back to their homes, and our word for it, that not one out of ten will ever think of California again, unless it be with feelings closely allied with terror

With a production thus diminished in *actual quantity*, we need not be surprised to find that prices rise, and that thus the man who labours finds a constantly increasing difficulty in obtaining food, clothing, fuel, and light, and yet lists of prices like the following are regarded as evidences of "prosperity." They are really evidences of a state of things that leads to those combinations among workmen for the purpose of raising wages, *which always take place when production is diminishing*. Such combinations abounded in 1836, and they are now rapidly growing in number, and must continue to grow as capital and labour become less productive of the commodities for which men desire to exchange labour, and as prices consequently rise.

Prices of Leading Articles in the port of New York, July, 1850.

	1846. Price.	1847.* Price.	1848. Price.	1849. Price.	1850. Price.
Ashes, Pots, 100 lbs	$3.50	4.87	5.00	5.75	5.87
Coffee, Brazil, 100 lbs	7.75	6.75	6.75	7.50	10.50
Cotton, fair, 100 lbs	8.75	12.25	6.87	9.50	14.25
Flour, State, bbl	4.06	5.12	5.18	5.00	5.31
Wheat, Ohio, 10 bu	8.50	11.00	11.00	11.00	11.20
Hemp, dew-rotted, ton	90.00	110.00	125.00	175.00	125.00
Sole Leather, Oak, 100 lbs	17.00	22.00	22.00	21.00	22.00
Tar, bbl	2.00	2.50	2.50	1.87	1.62
Oil, Whale, 100 galls	32.00	33.00	33.00	40.00	52.00
Beef, Mess, bbl	6.75	13.50	13.00	13.50	10.00
Pork, Mess, bbl	9.56	14.50	11.12	11.00	10.56
Butter, Ohio, 100 lbs	12.50	12.00	12.00	10.00	10.50
Rice, 100 lbs	3.00	4.87	3.25	3.00	3.37
Whiskey, 100 galls	20.50	24.00	22.50	24.25	26.00
Tobacco, keg, 100 lbs	7.00	7.25	6.00	8.50	10.00
Wool, Fleece, 100 lbs	33.00	45.00	42.00	38.00	45.00

If the reader will now turn back to page 17, and compare the present prices with those of the closing years of the tariff of 1828, to wit, 1832, 1833, and 1834, he will find but little difference between that period and the present. That done, I would beg him to remark, that at that date our production was increasing with great rapidity, *because our home market was rapidly growing*, and prices were maintained because our necessity for depending on foreign markets was diminishing. Now our production is daily diminishing, and farmers and planters are compelled to look to short crops as the only means of keeping up prices, because our home market is diminishing with the diminished power of producing cloth and iron to exchange for food and cotton.

* The year in which Great Britain made so many roads, and created a famine in England, and the potato-rot created one in Ireland.

What Others say of our Policy and Interests.—In *Blackwood's Edinburgh Magazine* for January, the editor, after frequent quotations from, and hearty approval of, Mr. Carey's writings in the *Plough, the Loom, and the Anvil*, and of the course recommended in this Journal for the development of our own resources, says—"By following such a course, she must, as her population increases, grow in greatness and in might, as must every nation wherein labor is estimated and cherished according to its proper value, and the rights of the domestic producer and workman guarded with untiring vigilance."

INADEQUATE ENCOURAGEMENT TO HOME INDUSTRY.

HOW IT INJURES THE FARMER.

For the interest of the American Agriculturist, the best of all importations is the importation of *men*, for the obvious reason, that every one who takes up his residence among us, adds so much to the productive power of the country. But immigrants from foreign countries are more especially beneficial to Farmers, when the policy of the Government is such as to tempt them to the *manufacture of our own raw materials:* for all their wages are sure to be invested in food or raiment—in *something that comes out of the land;* and how much better to have these wages expended and kept here in circulation in our own country, than to have them go abroad in payment for the products of foreign labor!

It becomes, then, an interesting question, how these consumers of the products of our agriculture are to be brought here in the greatest number?

A very large proportion of those who do come, are brought by means which are contributed and sent to them by their relatives who have preceded them. The lower the wages for manufacturing labor, the greater will be the number thrown for subsistence on the plough, and the less must be the surplus which remains to be sent abroad to transport hither those who are not only thus deprived of the means of coming, but whose desire to come is impaired and extinguished in proportion as you extinguish his hope of bettering his condition. Cannot every Farmer and Planter of common sense, then, understand how much he is concerned in the *diversification and reward of labor*, which attracts men to come here to his side, and there constitute for him able customers to buy and consume the products of his plough and his orchard? Quoting from Mr. Carey's essay on the Harmony of Interests, the distinguished Editor of *Blackwood's Edinburgh Magazine* says: "We hold by this proposition, well understood and energetically supported in America, that '*When a nation makes a market at home for nearly all its products, other nations have to come and seek what they require, and pay the highest price; and that when it does not make a market at home, markets must be sought abroad, and then sales must be made at the lowest prices.*'" "If this be true," says the foreign Reviewer, "it will follow that the way to sell at the highest prices, and to buy at the lowest, is to *buy and sell at home.*"

That it is true, any Farmer of common sense may satisfy himself by supposing a familiar case; as for example:

THE DIFFERENCE BETWEEN GOING TO SELL, AND WAITING FOR YOUR CUSTOMER TO COME AND BUY.

Farmer MARTIN, we will suppose, has a surplus horse that he can well part with, and wants to buy a choice ram to cross his fine flock, that is beginning to decline from too long breeding in and in. His neighbor THOMAS has a fine ram more than he wants, and is deficient in a horse for all work. Neither of them knows the wants nor the surplus of the other, and the question is, which of them places himself most in the power of the other, and deals to the least advantage—Martin, who takes his horse to Thomas's farm, and exhibits him for sale, and makes known his necessity for getting a good ram; or Thomas, who has his ram tied

and thrown into a cart, and goes to Martin and says: "Martin, I want to sell you a ram, having more than I need; and am deficient in a horse, having lost one last week by the bots. Have you one that you can part with?"

Is it not clear that the one thus applied to, and to whom the other had disclosed his wants and his superfluities, would at once perceive his advantage and begin to fight shy? Would he not at once hold back and appear at first indifferent about buying or selling? And is it not certain that the traffic would end in an advantage on the side of the one to whom the other comes with his commodity for sale? If not, he must either be very green at a bargain, or more than usually disinterested. Well, just so it is with nations. We are constantly pressing our flour and beef, cotton, pork, butter and cheese on foreign markets, instead of building up our own market by exciting competition for the products of the plough and the spade, the dairy and the orchard, among customers here at home, employed and well paid in other and thriving industries.

So, too, with the *tobacco planter*, who looks to foreigners to buy his crops. If by the protection of American manufactures, he would lead those in Europe who are now prevented from snuffing and chewing and smoking his tobacco, by the high duties levied on it, to come here where they could consume ten pounds for one, it would not be many years before he could sell ten pounds where now he can sell but one. All this is perfectly plain, and, but for party blindness, would be acted upon; and this country, instead of being now, as the *Edinburgh Review* calls us, "a British colony in a matured state," would be independent in fact, as we are only in name, and would, as another Edinburgh Reviewer still more recently says, "from that day forth grow in greatness and in might, as must every nation wherein labor is estimated and cherished according to its proper value, and the rights of the domestic producer and workman guarded with untiring vigilance." Thank Heaven, even this moral ophthalmia—party prejudice—is giving way before the light of reason and the force of enlightened and true patriotism.

THE LATE SAMUEL HAMBLETON, OF MARYLAND,

AS A FARMER AND AS A MAN.

If the nicest sense of honor and a never-failing observance of propriety; if true courage and unaffected piety, combined with a lofty patriotism founded on a just appreciation of the advantages of his own country; if all these could give claim to affectionate and enduring remembrance, then assuredly will the memory of the late Samuel Hambleton be ever fondly cherished and venerated by all who knew him; for who of them all will not be prompt to testify that he was, indeed, honorable, brave, pious and patriotic?

True, as has been said, he was, at the time of his decease, the senior Purser in our Navy, and by the selection of her Commander was attached to the flag ship in the celebrated battle of Lake Erie. But he was yet more, for he was the *trusted and bosom friend of the gallant Perry*, standing by his side in the hottest of the fight, and though "non-combatant" by commission, contributed, with the bravest of the brave, to the glorious issue of that second—may it be our last—*war for Independence on England!* Liberal, without prodigality or ostentation; friendly, without

unseemly familiarity, and social without excess, it was yet easy to perceive that his many and eminent virtues were founded, not more in his just and kindly nature, than in conscientious principles, well considered and worthy of the profoundest admiration.

But exemplary and stainless as was his long official career, accounting with scrupulous exactness for the millions committed to his charge, and always ready, in moments of peril to his country's flag, to go as far in its defense as he who went the farthest, it was yet not on ship-board, or in the glare of public service, that he won most upon the esteem of his friends, or that he found for himself the most congenial element of employment or duty. No! it was for the various and engaging occupations of agriculture, and the tranquillity of domestic scenes, that his taste was at once the most decided and cultivated. It was in the shades of his beloved "PERRY CABIN," consecrated to filial affection, to friendship and to study, that he sought and found his highest gratification, and his purest enjoyments.

> "Oh, bless'd retirement, friend to life's decline,
> Retreats from care, that *never must be mine*,
> How happy he, who crowns in shades like these
> A youth of labor with an age of ease!
> Who quits a world where strong temptations try,
> And since 'tis hard to combat, learns to fly."

Here it was that, surrounded and beloved by relatives, friends, and dependents, he could most quietly and effectively enjoy and perform the tender and responsible relations and duties of brother, master, neighbor and friend—with what uniform fidelity and kindness, let brothers, sisters, servants, neighbors and friends answer for him.

As a practical farmer, Mr. Hambleton was in most respects a model worthy of the closest imitation. First and above all be it said for him, that his humanity towards every thing dependent on him was no less remarkable than the soundness of his judgment in the practice of his favorite pursuit. With him it was a cardinal point that every thing should in season *be well housed and well fed*, and that no cruelty or abuse should be committed or permitted under any circumstances. The next rule was, that the great machine of all, the Land, to which all looked for food and sustenance, should in its turn be well fed and sustained. For this purpose all its refuse products were carefully preserved and compounded with sea ore or lime, or fish and other substances, for which the river and its shores, the woods and the swamps, were laid under contribution. No farmer better exemplified that golden rule in agriculture, no less than in morals, that where much is given, there may much be justly required. Admitted that he was fortunate in possessing the means to improve his farms, does that impair his claim to the higher credit of possessing the judgment and liberality to apply them with effect? While his estate was in a course of steady improvement, it was neatly and well managed in its details; not by the cruel exactions of any venal task-master, overseeing "on shares," but according to his own general directions, carried out by his faithful head servant Washington Mitchell, bought on his own entreaty, and in whose fidelity and obedience, and that of his fellow-servants, their beloved master had a right to contemplate with self-complacency the fruits of his own care and benevolence. So considerate and comprehensive indeed were these, that were it possible for Instinct to rise to the level, and to exercise the functions of conscientious Reason, there

is not a living thing that dwells at Perry Cabin, that might not lament, in the death of their late owner, the loss of one who was at all times careful for their comfort and happiness.

Farming, with our lamented friend, was not the resort of necessity, nor, as with too many who follow it, a mere animal drudgery. No! in sad recollection of many proofs of it, we may add, that he was well versed in the principles of his chosen pursuit, evincing, by his patronage and study of its literature, a high estimate of its dignity, as an intellectual calling; and by his example in the performance of the humblest duties assigned by the ancient and respectable Agricultural Society of Talbot county, (of which he was a beloved member,) his belief in the obligation of all who follow agriculture, to contribute to its elevation and improvement.

For the truth of all that is here said, and especially as to his decided partiality for rural life, and his preference, not alone for his own country, but for his own State, and the very county that must lament, while it is proud of such a son; the writer of this feeble tribute to his worth might go back for thirty years, for many proofs, besides the following, addressed to the present *Editor of the Plough, the Loom, and the Anvil*:—

The following letter to the Editor is from a highly valued friend, an officer of the Columbus, and was not intended to meet the public eye. We, however, take the responsibility of presenting it to our readers without the name of the writer—a name which, if subjoined, would give it additional interest with all who have the happiness to enjoy his acquaintance. Here again let us emphatically congratulate the friends of Agriculture, on the generous and lively and increasing interest which has of late years been manifested by our Naval Officers in the agriculture of our country. Not a ship returns from abroad that does not bring with her valuable contributions to our stock of agricultural materials and intelligence. Great and lasting will be the benefits that must accrue to our country from this provident and praiseworthy disposition among the intelligent officers of our navy. We will not pass by this opportunity of again suggesting, though not in a manner worthy of its importance, the propriety of providing, out of some special fund, a small select library, for the use of the officers of each ship, to consist of elementary works on Botany, Natural History, with voyages, travels, &c. &c. Having these sources of amusement and means of edification at hand, young officers would have recourse to them, instead of other and oftentimes deleterious amusements; a taste for books, and a habit of research would insensibly grow upon them, which, united with the advantages of travel into every clime in the public service, would infallibly make the most of our officers, what many of them now are, an ornament to every society, and an honor to their country.—*Editor.*

Columbus, Port Mahon, Island of Minorca, Feb. 23, 1821.

Dear Sir:—Your obliging letter reached me at this place yesterday, and afforded me much pleasure. Among the papers which you were so good as to send me, was one containing your address to the Agricultural Society, which I have just read with high satisfaction. Your eulogy on the mule I doubt not is well deserved. In our country they are generally badly broke, half starved, and seldom curried or stabled.

At Gibraltar I saw some of fine size and form, and as fat and sleek as your dray horses. They are used by the most dashy officers for the saddle, and appeared to move very pleasantly. In Maryland, a gentleman never thinks of riding a mule; he would be laughed at, such is the force of prejudice! I am of opinion that such mules as I speak of ($14\frac{1}{2}$ and 15 hands high) are more proper for private carriages, if not public stages, than horses. They are *true*, not easily alarmed, great trotters, very hardy, and may be kept at one half the expense. No one is a greater

admirer of that noble animal the *horse* than myself—I have owned some very fine ones; but I am, by experience and a regard to truth, compelled to say, that he is very expensive, and has been the ruin of many a thoughtless young buck in our country. I was much struck by the comparison which I once made of the expense of feeding a *man* and a *horse*. The allowance for a laborer in Maryland is a peck of corn and three and a half pounds of salt meat per *week*, which is not sufficient (supposing hay to be bought with the meat) to feed a horse properly more than *one day*.

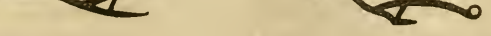
I found, on inquiry, that the fine mules I speak of are the produce of the *horse* and the *ass*. This is a mode of propagating them quite new to me, and I am assured it is incomparably the best. If so, it is an important fact, which ought to be known to all breeders, as she asses can be kept much cheaper than brood mares. (1.)

Asses and mules are used here for the plough, the saddle, and particularly for burdens, there being no carts or any kind of wheel carriages in the island. The loads they carry are wonderful. Had I not made the experiment I should never have believed the ass fit for the saddle. I have rode them frequently, and found them very pleasant, and more suitable to a hilly and stony country than the horse; I rode one about twenty-four miles in one day.

I calculate upon taking home a male jack, and a pair of the cream-colored Tuscany cattle, so famous for the yoke. Should I meet with such a horse as you describe I shall add him to my stud. I do not believe, however, that there is a finer breed of horses in the world for the saddle than the *Tom* breed in your neighborhood, and I would recommend to you to procure a stallion of the pure blood.

I am of opinion that the ox, for farming purposes, is superior to all other animals. In our part of the country he seldom has a fair chance, and it is no wonder that he is not a favorite. I saw many of the Tuscany oxen at work at Leghorn and Naples. They are tall, not thick set, and remarkably docile. In Talbot county of Maryland, they have, I think, the same breed. It is known by the name of Boardley's—and were, if I mistake not, imported by the patriotic gentleman of that name, who, some thirty years ago, wrote on agriculture and rural economy. They are much esteemed there for the draught. The late Colonel Smyth and Mr. Singleton had a number of them; and my brother Edward had a bull of that breed which he esteemed highly. (2.)

I sent home some beautiful white wheat last summer from Leghorn, and if I have an opportunity, I will procure more of it. I shall take several barrels of the seed of the Lupinella, which is much esteemed in Italy. You already have this seed; but it is not yet abundant. My friend, Mr. Folsom, has brought me a number of seeds of various kinds, from Smyrna—among others, the seed of pears and melons of a very superior kind. I have been promised some information respecting the agriculture of this island, by our Consul, an extensive landholder; but his numerous avocations will, I expect, put it out of his power to furnish it. The country is hilly and rocky. The plough used by these industrious people is very simple, and suits their land. It is formed of *two pieces*, *one* the handle, the other the *beam*, thus :—



It is pointed with a piece of iron, with a socket, resembling an ox's horn straightened; it has no share, no mould-board, but a peg or stanchion on

each side, inclining outwards, intended to spread a furrow. A man follows (when seeding) digging and levelling, where necessary, with a short-handled hoe, something like a pick-axe. After he is done the ground looks like an onion-bed. To prevent their lands from washing they make stone walls round the steep hills, which are cultivated to the tops; even mount Toro, which I visited, more than 2,000 feet high, is not an exception. Wheat and barley are their principal grain crops. They raise all kinds of vegetables and fruits—figs, grapes, oranges, lemons, peaches, pears, apricots, and, what is singular in this country, excellent apples. Everything is sold by weight, even fire-wood, which is very scarce.

I was much struck with the oddity of some of their teams. Sometimes we met with an ass and a cow yoked together; then a mule and an ox, and sometimes a mule and an ass; some teams were of oxen and others of mules, as with you. (The yoke and bow are used, not only for oxen, but for mules and asses.) Strange as these associations are, they are nothing to that mentioned by Dr. Cleghorn, who wrote fifty years ago. He speaks of the *hog* and *heifer!* but I think he must have been mistaken.

The tenant here farms on shares. The landlord stocks the farm. Nothing is sold but by his permission, after which the proceeds, in money, are brought to him, just as received. He divides it into two piles, and gives the farmer his choice. At stated periods the tenant has to deliver to the proprietor a fat sheep, bullock, hog, &c., as may be agreed upon. The people, generally speaking, are miserably poor; hardly ever taste meat of any kind, and are covered with rags, filth and vermin. Everything I have seen in this country, even the best part of it, has tended to make me think more highly of my own, and when I get home I calculate upon being a pretty good patriot. With the industry of these people, our country might be made a paradise. We are too apt to overrate the "old countries," and to imagine that they are happier and wiser than our own. When we hear of *grapes* and *oranges*, and *wines* as cheap as cider, we think of the garden of Eden. In some parts of the Mediterranean, the country is delightful, the soil rich and the climate delicious; but the government is execrable, and the morals of the people corrupted.

In Italy they have the advantage of us in a few particulars—climate, and fruits of a particular kind. But what can be finer than the fruits of our country—our strawberries, our raspberries, gooseberries, cranberries, whortleberries, blackberries, and many others of the berry family? Our apples, peaches, plums, &c., are or ought to be equal to any in the world. What country excels us in beef, pork, mutton, poultry, &c.? Is there any part of the globe which equals us in *oysters* and *bacon?* and in what part of Europe is *hominy* known? If I had no other objection, this last would be insuperable to me; *I would not live in any country where I could not get this dish.* The beef of this island is very indifferent—quite insipid. In Tuscany the meats are good, the mutton in particular. I have heard of one of our countrymen, a Kentuckian, who came out to see Europe. He landed on the high, rugged hills of Spain, opposite to Gibraltar, and, looking round with astonishment, asked, "Is this your boasted Europe? I have a better country at home." So he very wisely returned without going any further.

We are on the eve of sailing from this place, for some part of Italy, and it is with some difficulty that I find time to write you this hasty letter, and beg you to make due allowance for my situation. I send you a few

extracts, to be used as you may think proper; they were made several weeks ago.

(1.) We have strong doubts about the correctness of this information. It is well understood in Kentucky that the best mules are obtained from *large blooded mares;* and it may be considered a principle in breeding, that size is promoted by greater size of the dam, in proportion to the size of the sire.

(2.) The writer and his estimable and accomplished brother, Purser John N. Hambleton, brought among the best jacks ever imported, and their progeny have been distinguished at Maryland cattle shows. The Tuscany cattle, brought by the writer and by Commodore Bainbridge, were of a light iron-gray color, very much the same color and appearance as the Hungarian bull and cow selected by General Webb, for Mr. Colt of Paterson. Those brought in the Columbus came into the hands of the editor of the P., the L. and the A., and went finally to Mr. Middleton, South Carolina, where we understood they contributed very much to the improvement of their working oxen. Their form was lighter and rounder than Mr. Colt's, but otherwise the resemblance was very strong. One reason for their going to South Carolina was a conviction of their adaptation to a hot climate, from the fact that in Maryland in the hottest weather they seemed to prefer sunshine to shade. We should like to have some further account of them and their descendants, but how can we expect it, after receiving the following from our agent at Charleston? Alas! what strange things one is d stined to see if he lives long enough. Without one iota of abatement in our attachment to the South, or of our ambition to contribute in some degree, however small it may be, to their prosperity, we would ask, What have we done to incur this proscription since a distinguished association of Carolina planters voted to him, who is now thus repudiated, a gold medal, to be made of the virgin gold of South Carolina, for our contributions to the agricultural knowledge and prosperity of the country?

"J. S. Skinner, Esq.:

"*Dear Sir:*—I regret that I have to request a discontinuance of your valuable journal, the '*Plough*, &c.,' at the desire of the subscribers to it, in consequence of the present state of feeling exhibited at the North and East. The Southerners have determined, as far as possible, to carry out their intention of non-consumption and intercourse. Respectfully yours, ——— ———."

AGRICULTURAL IMPROVEMENT IN NEW-YORK.

Professor Mapes has lately asserted that "the wheat crops of New-York are less than half per acre what they were thirty years ago;" and adds, "Every bushel of corn, bale of cotton, barrel of resin, or other commodity we now send to Europe, and which is consumed there, places just so much of the ultimate constituents of plants in their soil for continued and repeated reproduction, and removes it from ours." "Many farmers," says the Professor, "are still living and carting manures upon their poor farms, who, in the Mohawk and Genesee Valleys, threw their manures into the river when younger."

In confirmation of this declaration of Professor Mapes, Mr. Willoughby, in his late address at Baltimore, stated the yield of the far-famed Genesee Valley to be not exceeding ten bushels of wheat to the acre; and Professor Johnston, of England, "standing as he does," according to Mr. Baldwin of Syracuse, "at the *head* of a profession which he so much adorns," showed that "the farming interests of New-York are in a process of deterioration," and "the average of all crops *continually diminishing*," "notwithstanding," says Mr. Baldwin, "our farmers, as a class, are intelligent, educated men."

Yet there has been no want of Agricultural Societies in New-York;

for, as far back as April, 1819, (32 years ago,) that State appropriated $10,000 to be divided among the several Counties in certain sums, on each County forming a Society and raising a like sum; and moreover, the act requires that each person to whom any premium shall be awarded for any agricultural product, shall make an accurate description of the process used in raising the crop, or of feeding the animal, as may be, and shall in all cases describe the nature of the soil, kind and quantity of manure, the state thereof, &c. &c.; and moreover, the law provides for the preparation and publication, at a very great expense, of the Transactions of these Societies, which, for 1848, amounted to about 1,000 pages. The act before us provides $1,000 for the purchase and distribution of seeds, &c.

And yet Professor Mapes, very high authority, tells us that the State does not now produce half as much wheat per acre as it did when that law passed!!

Does not all this show, that though Agricultural Societies are very exciting at the seasons when they occur, and serve to relieve the "dull routine" of rural life, they somehow do not seem to reach the bottom of the difficulty? That there is yet some deleterious influence at work corroding the heart of American Agriculture, beyond the mere want of knowledge, and which mere exhibitions of big potatoes, and fat hogs, and large ears of corn cannot supply? And what is that something? It is because we do not work up our own materials and resuscitate the land, by applying to it the refuse of its products; it is because we are ever wandering over the world looking for dear markets to sell and cheap ones to buy in, instead of cherishing our own market; it is because we keep the consumer and producer far asunder, instead of bringing the Loom and the Forge near to the Plough and the Harrow! That's the cause of the decrease in the average products of land, and until we discover and rectify *that*, we may give premiums till doomsday. When we have determined that the Manufacturer shall take his place by the side of the Agriculturist, the policy of British merchants to the contrary notwithstanding—then, and then only, will agriculture improve.

The late Thomas Law, of Prince George's, Maryland, who had a thousand times more genius and more knowledge than those who sneered at his want of practical information, in one of his agricultural addresses to the Prince Geo·ge's County Agricultural Society, thirty years ago, said, "Had I a starling like Sterne's, I would teach it to exclaim, *Home market! home market! home market!*"

How to make Cows Calve in the Day-time.—Every one has felt the inconvenience of having his cows calve during the night. In all seasons, but especially in winter, this is exceedingly annoying, and not only demands continual useless watching on the part of the cow-keeper, but also often, indirectly, causes the death of the calf and its mother. Now it has been ascertained by a person living in the neighborhood of Utrecht, that a cow with calf milked for the last time at night instead of in the morning, calves in the day and not at night. Out of 30 cows on which the experiment was tried, only 3 or 4 are mentioned by M. Numon, professor of Agriculture at Utrecht, as being exceptions to the above rule. As confirming the above statement, we may mention the fact, that a large farmer in the Campine has also tried the same plan with success.—*Flore des Serres.*

PEAT CHARCOAL—ITS USES, AND HOW PREPARED.

When, in our last, we suggested the use of charcoal for promoting the rapid growth of tobacco plants, we had not seen the following, which we find in a pamphlet highly commended by Doctor Lindley, and which we imported for the sake of what it contains about the cultivation of various vegetables:—

PEAT CHARCOAL AS A MANURE.

The fertilizing qualities of Peat Charcoal, even in its plain state, are very great; but when mixed with night-soil, its good properties are of course much increased, and in the latter condition a less quantity is required for an acre. Farmers often fail in raising small seeds, turnips, for instance; more especially in the south of England. The turnip seeds are sown in a poor hot soil, without any stimulant being immediately available. The seeds in consequence vegetate slowly, giving the fly time to eat the seed-leaf before the rough leaves have been produced. This can only take place in poor soils. On the other hand, *market gardeners never fail in obtaining excellent crops*, however hot the weather may be, a result owing entirely to their land being rich. This fact, therefore, should *induce farmers to mix their small seeds with powdered Peat Charcoal before they sow them. All complaints of their failing then would cease.* Every thing ought to be done that can be done to *stimulate your plants. They cannot grow too fast.* Farmers, like gardeners, do not want to occupy the land six months with one crop, if the same can be grown in four. *Charred Peat might be used in many ways.* It might be employed with advantage in cow-houses, piggeries, and in dung-heaps. When potatoes are planted, if Charred Peat is used instead of dung, the young crop will have none of those scabby appearances which always occur where dung is used in the furrow; and the latter offers a great harbor for all sorts of insects. The late Mr. Smith, of Deanston, informed me that, in the island of Lewis, he was burning Peat and using the ashes as manure, after the plan which I recommended two years ago. It answers admirably. The farmers of the south of England have no idea what Peat Moss or Bog is; they imagine that it is simply heath soil, which is a poor, sandy, black mould, generally covering the surface of the ground, not more than six or eight inches deep. On the other hand, I have seen Peat Moss twenty feet deep, and in some places thirty; all being one solid black mass. The Irish Amelioration Society ought to manufacture two sizes, one as large as the lump sugar we put into our tea; this size would keep strong clay land opener, warmer, and drier; the lumps of Peat would also retain moisture in the earth longer in hot dry weather, and pieces of this size would be more lasting as a fertilizer. (1.) The smaller size would suit light land, and would be serviceable for top dressings. It would be a pity to burn such valuable manure, or it could be easily compressed in a machine and dried; it might then be bought in London readily, and it makes the best of fuel. (2.) *Powdered Charred Peat* might also possibly make the basis of gunpowder quite as well, and perhaps better than wood charcoal. (3.) If Mr. Roger's plan of mixing the Charred Peat with night-soil could be carried out on a large scale, it would be much better than allowing the night-soil to be emptied into the common sewers, making them what may be termed elongated cess-pools, from whose chimneys or "gully holes" are evolved the most deleterious gases. Peat Charcoal has been proved to be a perfect deodorizer, and *mixed with this material our town filth might be carted to the country and made available at once.* This is the more necessary, as the hardness of the times will not now allow the farmer to send his wagon and four horses, with a man or two, to fetch home a load of dung, much of the goodness of which has been washed and heated out of it. For my own part, I have for some years used nothing but liquid manure water, salt, soot, and wood ashes, but now I shall employ Charred Peat. *All the plants I cultivate grow most luxuriantly in it plain as well as mixed with night-soil.* To amateurs I am sure it will prove a boon, as it will do away with the filth and nuisance of dung.

Since writing the above, I have *tried all sorts of plants in it. It grows a young plant very fast.* It will be famous for Pinepples instead of sand to mix with the mould, and for a Vinery border for mixing with the soil will be first rate because it will keep the earth porous, and give out its qualities for many years; especially

if pieces are used as large as lumps of sugar we put into our tea. And I am quite satisfied that no more sand of any sort will be used after this excellent Charred Peat Manure is made known. (4.)

(1.) It was first within our notice used in that way, with his flowers and vegetables, by Doctor Heiskell at Washington, D. C., some years ago, with obviously powerful effect.

(2.) It is used as fuel as far south as Long Island, N. Y., and north of that to Maine, we presume.

(3.) It will be seen in the extract we give below that it is *peculiarly fitted for that purpose.*

(4.) Why would it not answer a capital purpose and be profitably used in Carolina, in the cultivation of the sweet potato, where Doctor Sparkman says the soil to be preferred depends so much on the character of the manure, or fertilizing ingredient to be used? Various experiments, he says, "have proved satisfactorily that a stiff clay or alluvial soils, when liberally supplied with a silicious material, will produce more abundantly *than the best sandy soils.*"

From their abundance of pine, the "shatters" of which they use for covering their potatoes, might they not appropriate some of it to be converted into charcoal, since from the heat of their climate vegetable matter subjected to moisture goes at once into putrefaction and does not form peat, as in the North?

But we forget that because we were *Polked* to the north of Mason and Dixon's line in search of bread, our pages and our advice have been repudiated by some of our Carolina friends.

We have been for months waiting for room to insert the PRIZE ESSAY to which the Royal Agricultural Society awarded its premium on "PEAT CHARCOAL AS A MANURE," and have had the necessary engravings prepared; but fear we shall be compelled to postpone it once more.

There is much on the subject in the great work of Doctor Kane, some of which is here submitted, and will be found highly interesting, as well for the owners of peat bogs and for farmers who are destined to find in them a great resource, as for general and more scientific readers.—*Ed. P., L., and A.*

By means of the following analytical results, the general practical qualities and the chemical composition of turf may be considered to be established. The specimens were selected from Cappoge in Kildare, and Kilbeggan in Westmeath, on different sides of the great Bog of Allen, and from Kilbaha in Clare, where an extensive district of bog exists.

When ignited, the turf gives off inflammable gas, much water, and leaves a light, easily combustible charcoal. I found the specimens analyzed to yield,

	LIGHT TURF.		DENSE TURF.	
	CAPPOGE.	KILBEGGAN.	KILBAHA.	CAPPOGE.
Volatile matter,	73.63	75.50	72 80	70.10
Pure charcoal,	23.82	22.67	19.14	23.66
Ashes,	2.55	1.83	8.06	6.24
	100.00	100.00	100.00	100 00

By ignition with litharge it was found that

One part of Cappoge turf gave 13.0 of lead.
" Kilbeggan " 14.2 "
" Kilbaha " 13.8 "

Hence 100 parts corresponded—

Of Cappoge turf, to 37 of pure carbon.
Kilbeggan " 41 " "
Kilbaha " 40 " "

I determined also the elementary composition of these turfs; the results were as follows:

	CAPPOGE.	KILBEGGAN.	KILBAHA.
Carbon,.....	51.05	61.04	51.13
Hydrogen, ...	6.85	6.67	6.33
Oxygen,.....	39.55	30.46	34.48
Ashes,.....	2.55	1.83	8.06
	100.00	100.00	100.00

Turf contains much less nitrogen than coal. Hence the liquor obtained in distilling turf contains no free ammonia. On the contrary it is acid from acetic acid, but even of this it yields so little that it cannot become, as occurs in the case of wood, an object of manufacture.

The calorific power of dry turf is about half that of coal. It yields, when ignited with litharge, about fourteen times its weight of lead. This power is, however, immensely diminished in ordinary use by the water which is allowed to remain in its texture, and of which the spongy character of its mass renders it very difficult to get rid. There is nothing in the industrial economy of this country which requires more alteration than the collection and preparation of our turf. Indeed I may say, that for practical purposes this valuable fuel is absolutely spoiled, as it is now prepared. It is cut in a wet season of the year; whilst drying, it is exposed to the weather; it hence is in reality not dried at all. It is very usual to find the turf of commerce containing one fourth of its weight of water, although it then feels dry to the hand; but let us examine how that affects its calorific power. One pound of pure, dry turf will evaporate six pounds of water; now in one pound of turf, as usually found, there are three quarters of a pound of dry turf, and one quarter of a pound of water. The three quarters of a pound can only evaporate four pounds and one half of water. But out of this it must first evaporate the quarter of a pound contained in its mass, and hence the water boiled away by one pound of such turf is reduced to four pounds and a quarter. The loss is here 30 per cent.; a proportion which makes all the difference between a good fuel and one almost unfit for use. When turf is dried in the air, under cover, it still retains one tenth of its weight of water, which reduces its calorific power 12 per cent.; one pound of such turf evaporating five and one third pounds of water. This effect is sufficient, however, for the great majority of objects. The further desiccation is too expensive and too troublesome to be used, except in some especial cases, of which the more important shall be hereafter noticed.

The characteristic fault of turf as a fuel is its want of density, which renders it difficult to concentrate within a limited space the quantity of heat necessary for many operations. The manner of heating of turf is, indeed, just the opposite to that of anthracite. The turf yields a vast body of volatile inflammable ingredients, which pass into the flues and chimney, and thus distribute the heat of combustion over a great space, whilst in no one point is the heat intense. Hence for all flaming fires turf is applicable; and in its application to boilers it is peculiarly useful, as there is no liability to that burning away of the metal, which may arise from the local intensity of the heat of coke or coal. If it be required, it is quite possible, however, to obtain a very intense heat with turf, as I shall notice when speaking of the manufacture of iron.

I have already noticed the area over which turf may become available for industry. It comprises the central limestone plain, extending also over Galway and Mayo, with parts of Clare and Kerry. The cost at which turf may be consumed in the immediate neighborhood of the bogs, I consider to be, from pretty numerous inquiries, not above 3*s.* 6*d.* per ton, but in our subsequent calculations I shall take 4*s.*, in order that the error, if any, may be in excess of cost. I shall consider, however, that the turf is dried in the air under cover, which, if our industry ever becomes active, and our fuel economized, must be the ordinary practice. Its economic value may then be practically assumed as 44 per cent. of that of ordinary coal. The turf at 4*s.* per ton costs as much to give a certain heat as coal at 9*s.* 1*d.*

The removal of the porosity and elasticity of turf, so that it may assume the solidity of coal, has been the object of many experimenters, who have proposed mechanical and other processes for the purpose. Amongst these we may mention Lord Willoughby D'Eresby, whose anxiety to improve the condition of the industrial classes deserves the highest praise. Lately with us Mr. Charles Wye Williams

has brought into use various preparations of turf, and has given considerable impulse to the utilization of this kind of fuel. It has been found that the elasticity of the turf fibre presents great obstacles to compression; and the black turf which is not fibrous is of itself sufficiently dense. The only modes that present promise of successful issue, are those invented by Mr. Williams. One of these consists in drying the turf well, and then impregnating it with tar, which renders it waterproof, as it were, besides augmenting its calorific power. Turf so prepared has no tendency to re-absorb moisture, which is the serious failing of turf that has been perfectly dried, and the expense of thus bitumenizing the turf is, I understand, very trifling. It is said to be manufactured for from 6*s.* to 8*s.* per ton, and from the trials that have been made with it upon a very considerable scale, it appears to have a calorific power little inferior to coal.

All of those machines which have been invented for pressing turf, sod after sod, by manual labor, become ultimately too expensive to allow of their being profitably used. It is only by operating on a great scale, and with powerful machinery, in fact, only by manufacturing compressed peat largely for sale, that the operation can be made to succeed practically. This is what Mr. Charles W. Williams has so well effected at Cappoge. The turf, when fresh cut, has its fibre broken up as far as possible, and is then placed between cloths, and pressed by a hydraulic press of great power. The condensation is to about one third of the volume, and it loses about two fifths of its weight, by the water which is forced out in the pressing, and subsequently dried out. The sods of turf so prepared, even when formed of the very upper and spongiest stratum of the turf, are denser than wood. They have little or no tendency to grow damp, and it is found that including all labor, wear and tear, and original cost, this compressed peat can be delivered at the works for 5*s.* per ton. When this compressed peat is carbonized it gives a fine coherent coke, which contains very little ash, and amounts to about 30 per cent. of its weight, when the coking is properly carried on. The density of this coke is greater than that of wood charcoal, being found to range from 913 to 1040; the turf from which it was made having a specific gravity of from 910 to 1160. Its cost when manufactured does not exceed 20*s.* per ton.

The employment of turf as a source of heat in industry is extending: already it supplies exclusively the steamboats on the Shannon and a great number of distilleries and mills. From the numerical facts that have been given, the economy of its use may be inferred and compared with that of other fuel.

Not merely may we utilize turf in its natural condition, or compressed, or impregnated with pitchy matter, but we may carbonize it as we do wood, and prepare turf charcoal, the properties of which it is important to establish. The methods of carbonization are of two kinds: 1. By heating the turf in close vessels; by this mode loss is avoided, but it is expensive, and there is no compensation in the distilled liquors, which do not contain acetic acid in any quantity. The tar is often small in quantity, and the gases are deficient in illuminating power. Hence the charcoal is the only valuable product. Its quantity varies from 30 to 40 per cent. by weight of the dry turf. The products of the distillation of 1157 lbs. of turf were found by Blavier to be:

474 lbs.	charcoal, or	41.1	per cent.
226 "	watery liquor, or....	19.3	"
7 "	tar, or	.6	"
450 "	gaseous matter, or..	39.0	"
1157		100.0	

The quantity of tar is very variable; thus the turf used in the Iron furnaces at Voitoumra gives, when coked in close vessels:

Charcoal,.....	40.25
Tar,.....	24.50
Watery liquor,.....	14.00
Gaseous matter,.....	21.25
	100.00

The economical carbonization of turf is best carried on in heaps, in the same manner as that of wood. The sods must be regularly arranged, and laid as close

as possible; they are the better of being large, fifteen inches long by six broad and five deep. The heaps, built hemispherically, should be smaller in size than the heaps of wood usually are. In general 5,000 or 6,000 large sods may go to a heap, which will thus contain 1500 cubic feet. The mass must be allowed to heat more than is necessary for wood, and the process requires to be very carefully attended to, from the extreme combustibility of the charcoal. The quantity of charcoal obtained in this mode of carbonization is from 25 to 30 per cent. of the weight of the dry turf.

The charcoal so obtained is light and very inflammable. It possesses nearly the volume of the turf. It usually burns with a light flame, as the volatile matters are not totally expelled. This is shown by the composition of a specimen analyzed with the following result:

Carbon,	89.90
Hydrogen,	1.70
Oxygen and nitrogen,	4.20
Ashes,	4.20
	100.00

This charcoal is usually very light and friable. It is hence peculiarly fitted for the manufacture of gunpowder, and Mr. Derust, Pyrotechnist to Vauxhall, who experimented with it at the request of Mr. Williams, reported that it stood the several tests, and was 20 per cent. more combustible than wood charcoal.

For many industrial uses the charcoal so prepared is too light, as, generally speaking, it is only with fuels of considerable density that the most intense heat can be produced; but by coking compressed turf, it has been already shown, that the resulting charcoal may attain a density of 1040, which is far superior to that of wood charcoal, and even equal to that of the best coke from coal. The importance of this result in the metallurgic relations of this fuel I shall hereafter notice. As to calorific effect, turf charcoal is about the same as coal cokes and little inferior to wood charcoal, and it has been found to give from twenty-six to thirty parts of lead by its reducing action upon litharge. It is peculiarly important in the preparation of the charcoal from turf, that the material should be selected as free as possible from earthy impurities, for all such are concentrated in the coke, which may be thereby rendered of little comparative value. This is remarkably shown by observing the composition of the coke from the four varieties of turf, the analyses of which are given in page 556. Thus the cokes consisted in 100 parts of

	LIGHT TURF.		DENSE TURF.	
	CAPPOGE.	KILBEGGAN.	KILBAHA.	CAPPOGE.
Pure coke,	90.3	90.6	70.4	79.9
Ashes,	9.7	9.4	29.6	20.6
	100.00	100.00	100.00	100.00

Hence the coke from surface turf contains not 10 per cent. of ash, whilst that of the dense turf of the lower strata contains from 20 to 30 per cent. This latter quantity might altogether unfit it for practical purposes.

Such is the description of our sources of fuel, as far as I have been able to collect facts regarding them. I have been anxious to remove exaggerated ideas of opposite characters which have been entertained. Although destitute of the grand development of mineral fuel which has rendered the sister kingdom the centre of the industrial arts, we yet possess several coal districts of considerable extent, and yielding large supplies of fuel; and moreover, there is in our bogs amassed a quantity of turf, which, if the peculiar characters of that fuel be suitably attended to, may become of eminent importance to the country.

THE DOG TAX.—Who says American farmers pay no dog tax? Maryland forfeits every year at least $100,000, that she might realize from the extension of her flocks of sheep, and Pennsylvania at least double that amount, were it not for the certainty of their being destroyed by dogs. Thus the farmers of these two States may be said to pay a dog tax of $300,000.

THE GREAT BROBDIGNAG GLASS-HOUSE;

OR, JOHN BULL HUMBUGGING THE WORLD.

"It is proposed in a New-York paper that an Alderman there, who lately denounced the World's Fair in London as a second Congress of Vienna, got up to destroy the liberties of Europe, be sent to the Fair from that city as a specimen of *verd antique*."

GREEN or dry, the Alderman is not alone in his estimate. The following is extracted from an article in the January number of *Blackwood's Edinburgh Magazine*, in which is justly extolled the clearness and vigor of Mr. Carey's writings on political economy, in reference especially to his essays, "THE HARMONY OF INTERESTS, *Agricultural*, *Manufacturing*, *and Commercial*," as they appeared in this journal. The Editor of Blackwood says, as to the World's Fair, to which it is proposed to send the New-York Alderman as a specimen of *verd antique:* "It is with a feeling *nearly akin to loathing* that *we peruse* accounts of BROBDIGNAG GLASS-HOUSES, and sham exhibition of the Industry of Nations, reared at an enormous cost, when we know that the men who ought to be the producers of our national wealth—and who might be so, were they not made the victims of a heartless and senseless system—are being driven in hundreds from their hearths and homes, and cast upon the wide world without a roof to shelter them, or a rag to give them covering."

The real green ones we take to be those who will flock, with gaping mouth and eyes, from all parts of the world, to the *great show*, and who, in place of these thousands who are "driven from their hearths and homes, and cast upon the wide world without a roof to shelter them or a rag to give them covering"—instead of seeing these *fruits* of that system of monopoly that has beggared the people of India and of Ireland, and driven them to houseless misery and starvation, they will just have time to lift up their hands and eyes in wonderment at the fine *show*. The natural consequence will be, that the world of visitors will come away, leaving behind them some millions of dollars to the show-men, and overcome with astonishment to think how the world should ever dream of going any where, for any thing, except to the "great workshop of the world"!!

Where representatives are sent by Agricultural Societies, we propose for them instructions something like the following:—After looking at the Exhibition in London, and taking note of such things as indicate progress in the arts, you will be expected to travel *through the country—to note the condition of the agricultural laborer*—to see what proportion of what he produces falls to his lot for consumption. You will report particularly on the effect of a system which turns the people of a country from being active producers, to being mere shop-keepers, converters, and exchangers—middle-men to fetch and carry, supported out of the substance of the producer and the consumer, who would fain dispense with their services, if John Bull would allow them to come together.

You are not to have your eyes dazzled, and come back to us with flaming reports about the number of pans in John's dairy, and the thickness of the cream. We want you to take time and go look into the barn-yard and over the farm, and see whether, to produce all this cream,

the men and the horses have not been half starved; in a word, we want you to report truly, whether he has not paid too dearly for his whistle; and if you are going without the time and the resolution to do that, and thoroughly, then we prefer that you should go in your own name, if you will, but *not in ours.*

We shall expect to hear from you, finally, whether it be or be not true, as was said by Governor Pownall in 1769, when arguing in the House of Commons against taxing the Americans, "*They have within themselves every thing requisite to the food, raiment, or dwelling of mankind; they have no need of your commerce.*"

Instead of having these things looked into and reported upon, we shall doubtless have our ears and our papers filled, for months and years to come, with the wonderful sights that were exhibited in the great Brobdignag Glass-House. We shall have our eyes dazzled with the gilded leaves wrought by the great monopolists; but who will lift them to expose the serpents they conceal? Serpents with whose poison the very air is filled, driving thousands from their hearths and homes to perish by cold, famine and pestilence, and all in subserviency to "the policy of British merchants;" and to enable one Lord Mayor to regale his Highness Prince Albert, the reputed Father of the Show, and brother Lords Mayors, with *single dishes costing* $500!!!

So much for the Brobdignag Glass-House, gotten up, like certain raree shows in other countries, to amuse and humbug the public.

RAILROADS IN GEORGIA—WHAT THEY ARE DOING FOR HER.

☞ We frequently notice in distant papers very gross and inaccurate statements in ragard to the different railroad improvements in Georgia. Roads are mentioned as being in progress of construction which are already completed, while others are advertised as completed which never had an existence, save in the visionary brains of certain gentlemen about Albany and Charleston. We therefore give the following recapitulation:—

1.	Central Road, from Savannah to Macon, completed,	191 miles.
2.	Georgia Road, from Augusta to Atlanta, completed,	171 "
3.	Macon and Western Road, from Macon to Atlanta, completed,	101 "
4.	Western and Atlantic Road, from Atlanta to Chattanooga, completed,	140 "
5.	Southwestern Road, from Macon to Oglethorpe, nearly completed,	51 "
6.	Muscogee Road, from Columbus to Fort Valley, on Southwestern, in progress,	71 "
7.	Atlanta and West Point Road, from Atlanta to West Point, in progress,	85 "
8.	Milledgeville Road, from Gordon to Milledgeville, in progress,	18 "
9.	Eatonton Road, from Milledgeville to Eatonton, in progress,	22 "
10.	Wilkes Road, from Double Wells to Washington, in progress,	18 "
11.	Athens Branch, from Union Point to Athens, complete,	39 "
12.	Burke Road, from Eighty-mile Station, on Central Road, to Augusta, in progress,	56 "
	Total completed and in progress,	963 miles.

From this it appears that Georgia has in operation the Central, Georgia, Macon and Western, and Western and Atlantic roads, and the Athens Branch, making an entire distance of 642 miles. The Southwestern (51 miles) will be in operation in 90 days. The Atlanta and West Point road, 30 miles; the Muscogee road, 25 miles; the Burke road, 23 miles; and the Milledgeville road, 18 miles, making a total of 147 miles, will be put in operation the ensuing summer. This will make

the whole extent of railroad in operation in Georgia by 1852, 789 miles, leaving 174 miles to be completed. This will no doubt be accomplished in two years, when the system of internal improvements in the State will be almost complete.

The roads already in operation are all prosperous, and are realizing from eight to sixteen per cent. clear profits per annum. Thus is demonstrated the wisdom and importance of a proper system of improvements. Georgia, after expending nearly fourteen millions of dollars, is now *twice as rich* as when she commenced her noble enterprises.—*Macon Messenger.*

What is it, but practising on the doctrine we preach, that has enabled Georgia to shoot ahead of all the Southern States? What is the effect of her railroads but that of bringing the Loom and the Anvil nearer to the side of the Plough, diminishing the friction and expense of the machinery employed in the work of exchange between producer and consumer? The quicker and the cheaper their intercourse with each other, the greater the command which each gains over himself and his time and faculties; and the more time he has left for the work of production—whether it be for production by the machines of agriculture, or other machinery. Just in proportion as she learns to develop her own resources and to work up her own materials, so will she *advance in population, power, wealth*—in the application of science, and the improvement of the arts of agriculture, and all other useful industries; and yet there are many good men in Georgia who refuse to patronize this work, because we advocate the very policy by which she is advancing in all that contributes to the power and true glory of free States! But, notwithstanding the accidental adverse results of attempts to improve our legislation for encouragement of American industry, who can fail to see the progress of public sentiment in that direction since the question was asked by us a few years ago: '*Shall our cotton be sent abroad to foreign looms, or the Looms be forced to come to the Cotton?*"

Every one conversant with the course of public men in granting acts for internal improvement, must have perceived with what a slow, condescending, patronizing air, these gentlemen, clothed with a little brief authority, grant to the people the right to construct them—as if they were doing a gratuitous favor and giving away the public money; whereas such works are generally found, as here in Georgia, to be the best of all public investments—not only by actual returns in tolls, but, what is of ten times more importance to the State, by development of great sources of wealth, hitherto locked up, and bringing millions of property, otherwise valueless, into a condition to lighten the public burdens, by contributing to the public treasury.

"It is not enough," says a learned and eloquent author, "that a country may possess, in the fertility of its soil, or the richness of its mines, the materials for the creation of industrial wealth, but also there *must be the means of bringing these resources into play by land and water communication.* By their aid the different substances necessary to manufactures are brought to the localities where the processes to which they are to be subjected can be carried on with most advantage, and the produce be conveyed to the situations where its sale may be effected with most profit to the owners. Direct and safe modes of communication are, therefore, indispensable to the development of industrial pursuits, as well for the procuring access to raw materials, as to secure markets for the manufactured goods.

"The internal communications of a country demand attention, however, on grounds of far higher order than their merely facilitating mercantile

transactions; they are connected with the *highest moral aims* of the legislator, by their influence on the habits and the conduct of the people. The isolation in which man is condemned to live, in a district destitute of roads, or where transport is difficult and expensive, is fatal to his progress in civilization and humanity. He grows up in ignorance of his fellow-men; his mind, limited to the circle of a few ideas elsewhere obsolete, looks upon all deviation from them as fraught with injury and ruin. The results of new methods in the management of land or labor, which within a few miles are actually producing the greatest benefits, remain utterly unknown to him. The stimulus of contact with persons above him, and yet not too far removed from his own sphere to prevent the ambition arising within him of exerting himself to attain the comfort and consideration which they enjoy, does not present itself to his mind. His isolation and his ignorance remove him equally from the instructor, and the instructor from him, and he resists with violence, by which, in the absence of reasoning, he can alone show his will, the intrusion of all novelties calculated to break through the miserable monotony in which his forefathers and himself have vegetated. An enlightened French minister, in speaking of the cost of the manufacture of iron in France, as affecting railroads, said: 'The question of the price of iron,—it is the question of roads, the question of communications, of intercourse between man and man, of the obliteration of prejudices, of the production of mutual amity, of morality, and civilization.'"

Curious, and even more useful than curious, would be an accurate calculation which should show how much is gained, or in other words, how much added, to the time and the productive capacity of the people of Georgia, who travel now-a-days, over one thousand miles of railroad, in comparison with the old system of travelling over the same distance? Not only how much is gained of time to the traveller, but the gain accomplished by the *quicker realization of the products of labor*, to be again employed, as capital, in some form, in the work of production! It is by this means, and by her other more effective and powerful *machinery*, that Massachusetts has been shooting ahead of her sister States, who continue to work by hand power and to jog along over the old country roads, "bogging down," as they occasionally do in some of the States, even in mid-summer. It is chiefly by the extension of steam power, for intercourse and for productive industry, that Maryland has begun within the last ten years to go ahead. Virginia, too, which ought to outstrip them all, when her natural advantages are considered, is beginning to open her eyes to the undeniable fact, that the State which does not wish to be left far behind, *must learn to use the best machinery*, whether it be in the act of travelling, or in the work of production in every path of industry.

If, since Jefferson said to Austin in 1816, "We must now place the manufacturer by the side of the agriculturist," her statesmen had given themselves as ardently to the study of *practical productive industry*, as they have done to *political abstractions*, she would now be the leader of all the States, as she is the mother of so many,—the admiration of every one capable of appreciating that wisdom which enables men to turn to the utmost account those vast resources which God in his providence gave, not to be a stigma—a reproach—but to be skilfully and gratefully used. How long will she continue to send to mother England for cloth and iron, representing the agricultural products of degraded and starving labor?

To us, much more strongly even than to Ireland, might be applied the

following remarks by the learned author on the "INDUSTRIAL RESOURCES" of that ill-fated country;—more strongly to us, because we do possess, even in profusion, which Ireland does not, England's great elements of manufacturing power—*Coal* and *Iron*:—

Dazzled by the wondrous facilities for industrial activity which the structure of the sister kingdom presents, we had gradually sunk under a stupefying impression, that Ireland was not suited for any manufactures; and the phrase currently ran: "We are an agricultural population, the English a manufacturing people; our soil and climate fit us for producing corn and cattle, whilst her mines of coal and iron, the sources of her machine power, make her the workshop of the world. The position of the two countries is, therefore, correlative, and mutually advantageous: she sends us clothing, and we send her food; from her crowded factories we receive all the products of complex manufacture, and in return she takes our corn and cattle, the raw productions of our soil."

Well would it be if all legislators would profit by the further remarks of the same writer, as true as they are profound:—

The distinction which is drawn between an agricultural and a manufacturing population, is, indeed, much more one of social condition and of civilization, than of geographical character. Man, in his first escape from barbarism, attaches himself to the soil, becomes a shepherd, and next a farmer: as his wants become more numerous, his agricultural operations become more complex, his ingenuity increases, and the assistance he derives from the machines for abridging labor is more important. From watching cattle he passes to manufacturing food; the earth becomes a portion of his machinery; he cleans, prepares, and sets it into action, restores the worn-out portions, adds such as are deficient under the form of manures, and in all the general characters of his operations resembles a manufacturing chemist, except that his product is a palatable food instead of soap or oil of vitriol. So far from there being aught antagonistic between agriculture and manufacture, the former can only be carried on, with its best effect, where the industrial arts are in a flourishing condition. The farmer requires for his clothing the produce of various manufactures, and for his protection a house made comfortable by the labors of various artisans. His plough, his machines for winnowing and threshing, have been invented for him by ingenious mechanists. On the other hand, the manufacturer must be fed. The produce of the farm finds its quickest and readiest sale in the neighboring manufacturing town. The risk and cost of transport to a distance, of sales to strangers, of change of markets, are all avoided where domestic industry provides for the farmer purchasers in his own country. Moreover, besides food, the manufacturer takes from the agriculturist various materials, as flax and hemp, wool and hides, and cotton, which form a large part of the value of his farm produce, and yet derive their greatest value from the subsequent processes of manufacture to which they are submitted.

The two great branches of human occupation, manufacturing and agricultural, so far from being opposed or inconsistent, are thus really bound together by the strongest ties. The same principles of science regulate the operations of both, and afford similar means of amelioration. The products of both are equally necessary for the subsistence of a civilized people, and each depends for the disposal of his stock on *the capability of the other to purchase and to pay for it. No population that is exclusively devoted to the one or to the other mode of existence, can have a healthy organization, or be considered as in a natural state.* It is, therefore, important to seek for the means of advancing both together.

The reader will, we hope, consider that though the preceding has been suggested by a passage found in the *National Intelligencer* in reference to Georgia railroads, the observations are of general application, and so intended, as connected with the interests of the Plough, the Loom, and the Anvil generally, and as illustrative of the objects of *this* journal in particular; it being our design to show that, though it be well in practice to know how and when to plant an onion or a yam, it is, in the present condition of American Agriculture, much more important to begin with providing a *good market* for the products of the Plough. *That done*, the farmer will not fail to learn how to increase them.

NEW PROCESS FOR PREPARING FLAX.

Our readers have probably seen statements going to show that a new process has been discovered lately in England for preparing flax to be spun and wove as cotton is, without any steeping, in warm or in cold water. We have kept our eyes on the matter, without having had room to treat of it. Nor have we now. It is generally known, that a very enlightened and patriotic Society has existed for some years past in Ireland, for improving the growth and management of flax. Notwithstanding all that has been said in favor of the new discovery, they adhere to the impression that the best process is that by Schenck's patent, to wit: by hot water. In one of their late publications they say:—

The system of steeping flax in hot water, brought under the notice of this Society by the late Mr. Schenck, in 1847, has, from the first, had the earnest attention of your Committee. While approving the general principle, they have been cautious in pronouncing a decided opinion upon its details, in consequence of some objections having been made by parties in the north of Ireland. In order fully to investigate the grounds for these objections, they gave the matter in charge to a sub-Committee, whose report, in which your Committee very fully concur, will be laid before the Society at the present meeting; and they feel confident that it will sufficiently justify you in giving every encouragement, in all parts of Ireland, to the carrying out of the patent system. In the course of these investigations, your Committee, being made acquainted from time to time with the results of the various experiments which had been conducted with a view to testing the merits of the plan, considered it advisable to give publicity to them; and, in consequence of their favorable nature, many parties have been induced to establish steeping concerns in different localities. The adoption of the system has been much facilitated by your Committee having induced the late patentee to lower his terms for the right of working. Your Committee have given their best attention to all new projects brought forward for preparing flax fibre for sale, as the Society must be naturally solicitous to render every improvement auxiliary to the advantage of the grower, and to the perfecting of the products of his crop. They have, therefore, carefully investigated each new plan that has been submitted, and, for so far, they believe that nothing appears to combine so many advantages as Schenck's system. Within the last few months a plan of separating the flax fibre without steeping has been brought forward in London, by Mr. Donlan, which has attracted great public attention. Your Committee are of opinion, however, that the greatest caution should be exercised in the consideration of these statements, from the absence of data supported by the opinion of practical persons, competent to form a judgment on the merits of the proposed process, and from the fact that the dry preparation of flax fibre has been frequently brought forward at former periods and in different countries, but has, in all cases, been given up, owing to its inutility. Although it would be unjust to the inventor for the Society to pronounce decidedly against his plan, without full information on all its details, yet your Committee think, from the partial evidence which they have been able to collect, that there is no ground for supposing this process to be so advantageous, either to the producer or to the consumer, as Schenck's system; and they hope, therefore, that parties who have intended to adopt the latter may not be deterred by the plausible but unsubstantiated statements relative to the former which have appeared in the public journals.

Division of Labor in Flax Management.—It was early recognized by your Committee that great advantage would be derived from the culture of the flax-plant, and the preparation of the fibre for sale, being separated into two distinct departments, requiring the farmer simply to prepare the soil, sow the seed, and pull and dry the mature flax-stems; and leaving to other parties the steeping, drying, and scutching operations. Being aware that in Belgium a large proportion of the flax crop is purchased by factors from the growers, who steep it in the river Lys, and bring the fibre to market, your Committee, in 1843, encouraged some enterprising and experienced individuals to undertake a similar system in Ireland, and the Society awarded them gold medals in testimony of its approval. But, although the advantage was apparent, of superior quality and handling in the flax thus treated, from a variety

of causes it was not found to be profitable to the undertakers; and there is reason to believe that the system cannot be made practically available in Ireland. Schenck's hot-water method appears, however, to combine equal advantages in the quality of the product, with a fair profit to those who may embark in it as a business undertaking. While it is probable that those farmers who are particularly skilful in the management of their crop may produce as good an article by the ordinary mode, the proportion of such is so small to the great mass of flax growers, that there can be no reasonable doubt the average quality of flax brought to market from any district would be greatly improved by the adoption of the new system. In the value of the seed, which would be all saved by the new process, a yearly addition of fully a quarter of a million sterling would be made to the produce of the Irish flax crop; a fact of itself sufficient to warrant its general adoption. But the most important advantage of this method, as relating to the general extension of flax culture in Ireland, is the immediate market thus afforded to the grower, who is frequently deterred from an extension of his flax crop by the risk and uncertainty attending the ordinary process of steeping in the open air, as well as by the difficulty of managing a large quantity, all of which has to be steeped at the same time; while, in many districts, the absence of facilities for watering precludes farmers from attempting its culture. In the introduction of the crop where it has not hitherto been grown, the establishment of a steeping concern and scutch-mill at once removes all the difficulties arising from the critical nature of the ordinary processes, and the want of a market on the spot for the fibre. With proper instructions in the choice of soils, their preparation, the selection of seed, and the sowing, pulling, and saving of the plant, the farmer will be enabled to produce a good article of flax-straw, while the capital, skill, and undivided attention of the steeper will insure that the fibre is produced in the market in a satisfactory state. Your Committee therefore consider that a much more rapid development of flax cultivation will take place all over the country, by the carrying out of Schenck's system, than if the growers were obliged to depend on the old method of manipulation.

Saving of Flax-seed.—The value of the seed of the Irish flax crop, during the ten years of the Society's labors, cannot be estimated at less than £2,000,000. Of this large amount probably not more than one tenth has been rendered available, the rest having all been steeped with the flax, and thus utterly lost. Your Committee have been untiring in their exertions to impress upon the farmers the lamentable waste arising from this practice; but even yet with only partial success. The reasons which have been instrumental in causing farmers to neglect this advice are various. Many could not be made to believe that the quality of the fibre is not injured by taking off the seed, and this opinion has been strengthened by the operation of rippling being often carelessly performed, with inefficient tools, so as to tear and break the ends of the flax. It was also found difficult, in many cases, to carry on the rippling and steeping of a quantity at the same time. But the chief obstacle arose from the unfavorable weather, which frequently sets in in our climate at the pulling season, rendering it very difficult to dry the seed properly in the open air, and obliging the growers to kiln-dry it, which, when hurriedly done, causes the seed to shrivel, and leaves it of little comparative value. It has only, therefore, been in certain districts that the saving of flax-seed has become at all general, while in others it has not been practised at all. It is with no little satisfaction, therefore, that your Committee have to call your attention to the fact that the drying of the flax-stems for Schenck's patent process necessitates the preserving of the seed, and insures its being saved of the best possible quality. Flax-seed thus saved can be employed in two ways, either for sowing again or for cattle-feeding. There is an annual import from foreign countries into the United Kingdom of about 650,000 quarters of seed, and 70,000 tons of oil-cake made from it; value together about £1,950,000, all of which could readily be supplanted by the home-grown article, while the valuable manure which it produces would return to the soil the greater part of the substances taken from it by the plant. To meet the annual demand for sowing about 28,000 quarters of seed would be required, at an average value of £112,000. Nor would the money value be the only advantage of producing this at home. It often happens, as in the case of the present year, that enough of foreign seed cannot be procured to meet the demand; and while its price is so much enhanced as to place its purchase beyond the means of the poorer class of farmers, much land that had been intended for flax is put in other crops, after the import of seed has been exhausted. It is very gratifying to find that more than 6,000 bushels of seed from the steeping concerns were sold last spring to farmers, and that the produce, as in all instances where good home-saved seed is used, was abundant, and

generally excelled the crops from foreign seed. Your Committee calculate that nearly 40,000 bushels of Irish seed will be available for next sowing season, from this and other sources. They look confidently forward to a period not far distant, when the import of foreign seed will be restricted to the quantity necessary to maintain the vigor of the plant, as it has been found that if the same strain of seed be used for successive years, it degenerates in quality; but this might be obviated by changing the seed to different soils, as is done in the case of other plants.

AGRICULTURAL EDUCATION IN MASSACHUSETTS.

SOMETHING WORTHY OF NOTE IN THE CULTIVATION OF POTATOES.

We heartily unite in the hope expressed in the *Boston Journal*, that the Report alluded to in it will be speedily published; but futile will be all attempts at the general improvement of the agriculture of any country, until those who carry it on are *more appropriately* educated to understand the principles of the art, and of the machinery employed in it.

Massachusetts, by placing the Manufacturer by the side of the Agriculturist, *combining* the powers of the Loom, the Anvil, and the Plough, has prepared herself to adopt and insure such a system of *appropriate* education for Agriculture, in advance of any other State in the Union.

The Commissioners appointed by the Governor and Council, under the authority of an act passed by the last Legislature, have already made their report, and we are informed from the best authority, that it is every way worthy of the talented gentlemen employed in it, and that when published it will be an honor to the State. The general report is from the pen of the Hon. M. P. Wilder, and it is accompanied by a separate paper, drawn up by Prof. Hitchcock. This gentleman, we understand, visited *more than one hundred, and has given full statistics of about three hundred and fifty of the agricultural schools of Europe*, embracing a mass of useful information upon the subject unequalled by any thing existing in such a form, even in the old world. We trust that this report will be printed without delay, and that the recommendations of the Commissioners will be adopted and fully carried out.

We observe in the same number of the *Journal*, a discussion at one of the meetings in the Legislative Hall, as to the interminable subject of the *Potato rot*, which, as usual, amounted to little or nothing.

The ideas of importing the potato from its native country and of getting new varieties from seed, have been carried out in England, but without success.

We have lately imported an essay on the cultivation of the potato, written for the great premium offered in Europe, and shall give it as soon as we can get room for it. It was written by Mr. Cuthill, an eminent Horticulturist of Camberwell, near London.

Cottage Farm, Feb. 1, 1851.

Mr. Editor:—In May, 1848, you took the liberty to *read* before "certain gentlemen" in New-York, and afterwards *publish* in the *Farmer's Library*, an extract from a communication then made to you, detailing an experiment made in the *cultivation* of the potato and its probable influence upon the *rot*. Having cultivated a lot in the same manner pretty much last summer, and regarding it as entirely conclusive as to the *method of cultivation*, if not of *avoiding the rot*, I take the liberty to report it briefly, to be disposed of as you may deem proper.

The land was prepared as usual, laid out into rows two feet apart, manure put in the rows, the potatoes dropped on the manure and covered with the common hoe; machined wheat straw was then applied and carefully spread over the whole

surface, to the depth of 6 or 8 inches. The potatoes came up through the straw promptly, grew very well and without interruption throughout; the ground always appearing moist under the straw, notwithstanding drouth during part of the time of their growth. The varieties planted were the Mercer, Pink Eye and Blue. No vegetation appeared upon the surface of the straw but the potato tops. Product at the rate of upwards of 300 bushels to the acre, with no indication of the rot, although prevailing in the neighborhood. This season I shall manure the ground broadcast and plough it under, harrow and then plough them in with the shovel, plough to the depth of 3 to 4 inches, beginning on one of the sides of the field, drop in the furrows, and so dispose the rows as not to be more than 18 inches apart, strewing plaster, ashes, guano or agricultural salts of some kind, in each row, and then apply the straw fully of the depth above mentioned, that being necessary to prevent the growth of weeds. The crop ought to be planted early, so that after covering it may have the advantage of being well saturated by the spring rains, after which further rains will not from my experience be indispensable to the growth and full *maturity* of the crop; a matter of no small moment, when the extent to which they are used as an article of diet is taken into view. After the potatoes are harvested, the straw can be again spread and full advantage had of Dr. Baldwin's theory.

J. S. Skinner, Esq. Respectfully yours, D. W. Naill.

To an application from the French Consul on the part of his government, we have referred to this repeated experience of Mr. Naill, as the most reliable practical fact that has fallen under our notice. The case referred to in the commencement of the preceding was related in the *Farmer's Journal*, vol. iii. page 579. It was thus:—

Senator Naill supplied a neighbor with potatoes for planting, who carefully planted the sets from 3 to 4 inches deep in drills about 18 inches apart, *covering* the drills carefully with straw, from 3 to 4 inches deep, except a small portion that was left uncovered, by way of experiment. The covering of straw *shaded the ground*, as recommended by Dr. Baldwin, prevented the growth of weeds, and superseded cultivation. The result was an excellent crop of sound potatoes so far as the drills were thus covered with straw. Those *left uncovered*, *suffered with the rot.* Surely this experiment is easily tried—*but*—let those who try it, report the result to the Edit. P., L. & A.

SEA-KALE.

There is much room for wonder when we reflect on the slowness with which new plants are introduced, and improvements adopted in Agriculture and Horticulture. We remember when the tomato, of which many thousand bushels are now greedily consumed, was cultivated in the garden of the Editor's father, as an ornament only to be looked at and admired, called the *love-apple.*

The first mention of *sea-kale*, that we recollect, was a strong recommendation of it in the *American Farmer*, some thirty years ago, by that accomplished horticulturist, Gen. T. M. Forman, of Maryland, who was then its only cultivator and friend in that State. There is no good reason why it should not be in very much more common use, as a delicate and delicious vegetable.

We find the following in a small pamphlet which we lately received from London, and which contains much about the cultivation of the *Potato*, *Strawberry*, *Rhubarb*, *Asparagus*, *Vegetable-Marrow*, *Melon*, *Cucumber*, *Love-Apple*, and other things, for which we only wish we had room now, since it will soon be too late for this season to avail of the information. The instruction in this pamphlet comes from one of the most celebrated and successful horticulturists in the neighborhood of London, Mr. James Cuthill.

Of the great difficulty of introducing the most invaluable vegetables into common use, it would be sufficient to refer to the gumbo, or *ochra;* a few pods of which, sliced and well stewed with a small piece of the flank of beef or knuckle of veal, is enough of itself to make a dinner for half a dozen better people than some Kings or Lord Mayors.

Sea-kale is another most wholesome and delicious vegetable; but owing to the expensive ground in which it is grown as well as the costly management, the middle and lower classes seldom or never taste it. I shall not describe the present way of managing it, for that is well known; but I shall proceed at once to detail a plan that will supply the London markets at a time when other vegetables are scarce. When we reflect that this is also a native of our sea-coasts, it is very hard that we should have to pay a shilling for a moderate dish of it, and that too in the month of April. This vegetable, the very reverse of asparagus, unblanched, is wholly uneatable. I would propose that acres of it be planted near the various lines of railway, choosing for them a rich, deep, loamy soil, sloping to the south. The ground ought to be well drained, which at all times makes 4° or 5° difference in its temperature, and then trenched at least two spades deep, previously putting on a good dressing of dung. Salt could be put on (two tons to the acre would not be too much) every February. Supposing the ground to be ready for plants by February, and a large stock of roots that had been sown in the previous spring at hand, take up the roots and cut off the head or eye; then cut up all the roots into lengths of three or four inches, taking care to know which are the top ends; for if this is not attended to, and the lowest part is planted upwards, the eyes, when they grow, would have to take an opposite direction and would not make so fine plants. The reason why market gardeners get so fine kale is owing chiefly to their not allowing more than two buds to grow on a plant at thinning-out time in spring; gardeners in general leave five or six. Market gardeners all force sea-kale. The roots after cutting the kale are carefully kept till spring; they are then cut into pieces and planted out into rows to grow into good plants for the next winter's forcing. Upon my plan the rows should be three feet apart, and one foot, plant from plant, in the row. The reason why three feet is allowed between the rows is to give fair space for the kale to grow in, as well as for an intermediate crop, which I expect will pay for the expense of the sea-kale. A single row of kohl-rabi, mangel-wurzel, swede-turnips, or cow-cabbage, would not shade the kale too much, and in the autumn when the temporary crop is removed and the kale-leaves getting yellow, the leaves might then be taken off the crown to the centre between the rows, there to be dug in along with the manure. This would enrich the centre for the next year's intermediate crop.

The process of blanching and the means of accomplishing it form our next consideration. The cheapest and most efficient plan is with pots: not those half-crown pots, with a lid made to fit them and other costly apparatus; but another kind of pot which I propose to have made for the purpose with no holes in it at all; rather rounded at top, a foot high, and a foot in diameter. They could be made for about six or eight pounds a thousand. Pots thus made would be much cheaper than covering the crowns over with mould in the centre. In the first place, land for sea-kale must not be too light unless it is very deep, and if heavy it would be wholly unfit to blanch the heads in; besides, all kale must then be washed, which would spoil it. Sea-kale ought never to be wetted until cooking time. Its roots are often much destroyed by wire-worms, but a good salting and application of soot would stop them from breeding, and in time would eradicate them. The length of time the old roots ought to occupy the ground ought also to be entirely altered. Gentlemen's gardeners, in general, look upon a piece of sea-kale, when once made, to last for ever. Not so the market gardener; he is always first in every thing, because he has to make the best of every thing. Who has not seen in private gardens plants growing in summer, some two feet apart, some four, and some rows entirely gone, all in the most irregular manner? The process of lifting the roots for forcing would soon alter this, and by following the above methods, large supplies of this most delicious and much neglected vegetable would be obtained; and all classes, and at a time when other vegetables are scarce, would be enabled to eat it. Sea-kale being hardy would be forced a little by the sun acting upon the earth; the pots would retain the heat and bring it on much faster than if it were covered with mould, and I am quite certain that the crops would pay much better than grain or root crops; but it must be borne in mind, that for late crops of kale or asparagus either, ground sloping to the north would make it ten days later, and as for the old plan of putting on large quantities of leaves mixed with dung, it ought at once to be given up, being not only unsightly

but expensive and inefficient, boiling the plants in the centre, while the outside row was quite cold. Propagate roots every year; take them up when wanted, and put as many as you want into a frame with a very little bottom heat. Pots could be used for it, either in a small or large way, by putting two or three roots into a pot: a plan I have followed in the blanching of chicory. I would simply take up the roots, plant them in the pots, and reverse the next smaller size over the crowns, stopping up the holes with a piece of clay, watering the roots, and then placing the whole in a moderate heat. By this means a much better succession of sea-kale could be kept up than by employing cart-loads of unsightly fermenting manure. As the kale is cut, lay the roots into a damp mould until March, when they can be cut into sets and again planted out for another crop for next winter. When the sets begin to grow round the edge of the top, let them be thinned out to two eyes. Five years is the utmost length of time a permanent plantation ought to be allowed to stand. One or two good soakings of manure water, or sewerage water better still, just after the crop was cut, would make the heads as big again for another year.

ASPARAGUS.

This king of vegetables is in great demand among the higher classes and more opulent tradesmen; but the poorer tradesmen and working classes can only "look and admire" it in the shops. Although a native of Britain, many do not even know the taste of it, owing to the expensive way in which it is produced, and the expensive nature of the land in which it is grown round London. Now there is no good reason that I know of why it should not be obtained at a less cost and sold at a less price. Why should not some spirited gardening farmers establish a few fifty-acre fields for its growth? An eligible site for them could be easily found along the lines of railway, choosing a deep, sandy, loamy soil, but not tenacious clay, for the purpose. A soil of this description would be rich in itself, and would not require so much manure as very light sandy soil would do, and in which it is now generally grown. The light soil gets lighter every year, on account of the manure put into it; but good loamy soil would produce asparagus to pay at less than half the price it is now sold for in the London market, and every class would then be able to partake of it "as the same as any other vegetable.

To establish a field of asparagus, spade labor must be resorted to, clearing out most carefully *couch, bindweed*, &c., and using the strongest and best manures, as night-soil, cow-dung, salt, stable and other manures. Sewerage water would suit perfectly, if it could be had and applied in the growing season, and when the plants are in bearing. It might also be applied after the crop is cut, for that is just the time when the roots are most in want of a stimulant to form a mass of fine buds for the next year's cutting. The field ought to be well drained, all drained land being warmer, earlier, and much more productive than undrained; and otherwise well prepared in autumn, before the heavy rains of winter set in. It should be trenched three spits deep if possible, the last spit forming a ridge, which would be well pulverized by the frost. In March those ridges should be levelled down, and the ground laid out for planting.

As it is my intention to discountenance the production of long, white, drum-stick asparagus as much as I can,* I beg leave to advocate the following plan, by which in time every row will form its own bed. I propose that each row be planted three feet distant from the other, and that each plant stand one foot apart in the row. This will give ample room for cleaning the crop, and for drawing up earth over the crowns, so as to form a ridge three or four inches deep, to be lowered again for the purpose of enriching the soil in the autumn and winter. By this method I consider that asparagus might be cut at least ten days earlier than it is by the plan now practised of burying the roots deep in a bed of earth, where sun and air cannot act upon them; and as for flavor, it has long been proved that although gentlemen's gardeners do not grow asparagus so large as the market gardener, of the two *it is by far the finest in flavor, with at least three times more eatable matter in each head, though only two thirds the length.* I have had asparagus sent to me from Brussels, all blanched together a beautiful creamy white, but when cooked, I could not discover the taste of asparagus in it. It was watery and insipid, *as highly blanched asparagus must always be*, having only the watery flavor of the roots. I have proved

* We wish you and all your co-operators success in that.—*Ed. P., L., and A.*

this years ago, by keeping it in frames shut up, and the glass covered over with mats to exclude light.

I imagine that I have said enough to explode the old-fashioned and expensive plan of growing this much-esteemed British vegetable. Some imagine that unless the roots are covered during winter, the frost will kill them. If roots are moved during winter, the wet will rot the injured fibres, and no gardener who understands any thing of vegetable physiology would think of lifting the roots for planting until February or March, unless for forcing, and the latter are put into heat at once; but asparagus is perfectly hardy. The plan of putting large quantities of manure on it during winter is nevertheless good; for the winter rains wash the strength of the manure down among the roots. I should give the ground a good salting annually in February; and when cutting is discontinued in June, I would *soak* with manure water, or town sewerage water better still, or even spread on dry artificial manure, for the heavy rains will soon wash the strength of it among the roots, and just at the time when the latter were making fresh crowns for next year's crop. This is no doubt the proper time to manure asparagus. If the above method of cultivation is adopted, I doubt not that its benefits will soon be discovered, not only in the shape of improved "grass," but also by the consumer. I believe that it is impossible for the grower to alter his mode of culture without the assistance of the consumer, and I am sure that by the plan I have just been advocating, the drain on the roots will not be half so much as it now is, owing to the fact of the latter having to form such a quantity of underground sticks ultimately to be thrown away. Wherever it is practicable asparagus ground should slope to the south or south-east, and the rows should always run south and north. Where the land is light, ploughs might be used in throwing up the ridge on each side of the row, and then it could be forked over. The chief labor and expense will be in cutting and sending it to market, which will form employment for the people in the neighborhood. In order to prove what the exclusion of air has to do not only with the flavor, but the hard or woody texture of the stem, (under protracted growth,) I had several heads of asparagus, just out of ground, covered over with long cucumber glasses, and all air excluded. When the stems reached the top they were cut and boiled; but they were so hard that not even the top could be used, proving at once that without plenty of air the stem gets tough and useless. The present plan of making asparagus beds round London, consists in putting on an immense quantity of manure and trenching the ground three or four feet deep, mixing the manure as the work proceeds. In March the ground is measured out after the following manner: Suppose that a fence runs south and north or otherwise, three feet is allowed between it and the first row; a drill is drawn about two inches deep, the seed sown thinly, say six inches or a foot apart,—that gives choice of drawing out the weakest in order that the permanent crop may stand one foot apart. The next row is sown eighteen inches from the one just mentioned; then for the alley and two sides of the bed five feet are allowed; then another row of seeds, and so on. That gives two rows to each bed. The first year, onions are generally sown all over the ground; the second year, lettuce or any dwarf-growing vegetable that will not choke the asparagus; and so on, until the third year, when the beds are formed out, and a few inches of mould dug out of the alley and put on the crown; but only a few of the finest heads are cut this year. Autumn arrives, and when the halm is cut the whole of the ground is forked over and planted with cabbage, coleworts, or winter-greens; then in spring the beds are largely supplied with mould out of the alleys, covering the crowns from eight to ten inches deep. The finishing of the cutting must be left to the grower. A fair crop of heads must be left after four or five weeks' cutting, in order in some measure to strengthen the young buds for the next year's crop, and to restore to the roots what has been taken from them in the shape of a crop; but not one head must be allowed to grow until you leave off cutting entirely at the end of the fourth year. When the halm gets ripe it is all cut down, and the mould thrown into the alleys and there enriched, and the whole of the beds and alleys are planted again with cauliflowers, &c. Such is the treatment which the London market gardeners give asparagus; but the plan which I have practised for these twenty years is as follows: As soon as the dead halm is cut down in autumn, I give the beds a good dressing of rich manure for the winter, salting them in spring and covering the manure with mould, to prevent evaporation. The rain carries down the strength of the winter covering to the roots, and when spring arrives it might be raked off into the alleys, leaving only mould enough on the beds to protect the roots from the summer sun. We have then asparagus, green and eatable almost to the very root. The Rev. George Wilkins, of Wyx, proved that by the above management he cut asparagus much earlier and in much greater abundance, with much finer flavor, than by

the deep-covering system. Sea-weed makes the best manure, where it can be had, for asparagus. Perhaps the finest asparagus I have ever seen was at Ipswich. The beds were at the bottom of a garden where the river Orwell runs past. During the winter this river overflows its banks, and some five or six weeks these beds are partially covered with water. This no doubt left a rich deposit; but the best time to irrigate would be in the growing season. The roots of asparagus are largely provided with fibres, evidently formed to take up much water, and my flat system would facilitate the irrigation system much.

GRASSES.

Alopecurus pratensis, or Meadow Foxtail Grass.

Specific character of distinction.—Stem erect, smooth; spike somewhat panicled; husks or glumes of the calyx acute; hairy and connected at the base; shorter than the awn of the corolla. A native of Britain.

Dissections.—Fig. 1. Calyx and floret magnified; 2. Anthers; 3. Style and germen magnified; 4. and 5. Style and germen natural size.

The produce of this grass, about the middle of April, from a clayey loam free from stagnant moisture, is:—

	Per Acre. *lbs.*
Green food, - - - - -	9528
Affording nutritive matter,	483
At the time of flowering—	
Herbage, - - - - -	20418
Dried, or Hay, ditto, - -	6125
Affording nutritive matter,	478
At the time the seed is ripe,	
Herbage, - - - - -	12931
Dried, or made into Hay,	5819
Affording nutritive matter,	454

The culms of the Meadow Foxtail grass continue succulent long after the seed is ripe; hence it is that the culms of the flowering crop contain proportionally more water and less solid nutritive matter than the grass or herbage at the time the seed is ripe; a wise provision of bountiful Providence in the natural economy of the essential permanent pasture grasses, by which the herbage of this and other early flowering grasses increases in nutritive properties until the seed is ripe, and by the time the general summer grasses are in flower, (the period of growth at which these are most nutritive,) the whole or all the essential species approximate to a state of perfection as to their value for hay, containing at this period less water and proportionally more solid nutritive matter. Did these early flowering grasses afford more nutritive food at their period of inflorescence, (as is a general property of the summer, or commonly but erroneously called *hay-grasses*,) then in that case their value would be greatly reduced, inasmuch

as the seeds ripen at an early season; and were the culms to be reduced to nutritive properties by the ripening of the seeds, all that portion of the hay composed of these early grasses would be of an inferior quality, but which in fact is just the reverse.

The seeds of these more valuable early-flowering essential perennial grasses are light and often defective; a circumstance which detracts from their otherwise great value, because of the less facility afforded to their cultivation in the increased expense of saving or collecting their seeds.

For soils of an intermediate quality as to mosture and dryness, the Meadow Foxtail is one of the most valuable grasses for early growth, produce, and nutritive properties. In all the pastures most celebrated for fattening in England, this grass constitutes a large proportion, and is found to be closely cropped by the stock. There the Foxtail flowers in April, May, and in the beginning of June, and ripens the seed in June or July, according to the season of flowering, which depends on the nature of the soil, the weather, and the site of the pasture.

Poa trivialis, or Rough-stalked Meadow Grass.

Specific character of distinction. — Panicle rather spreading, spikelets three-flowered; florets lanceolate, five-ribbed, connected by a web; stipula oblong; stem and leaves roughish; root fibrous.

Note.–The sharp-pointed sheath-scale of this species of *Poa* distinguishes it with the greatest certainty from the *Poa pratensis*, with which it is often confounded.

Dissections. — Fig. 1. Spikelet of three flowers; 2. Calyx magnified; 3. Corolla; 4. Germen and feathered stigma.

When cultivated on a brown loam with manure, the produce of grass or green food is:

	Per Acre. lbs.
About the middle or latter end of June, when the grass is in flower, - - -	7486
Dried into Hay, - - - -	2246
Nutritive matter in ditto, -	233
When the seed is ripe, the produce is, Grass or green food, - - - - - - - -	7827
Made into Hay, - -	3522
Nutritive matter in ditto, -	336
The lattermath produce is, Grass, - - - - - - - -	4764
Nutritive matter in ditto, -	223

The superior produce of this meadow grass, its highly nutritive properties, the peculiar seasons in which it arrives at perfection, and the marked partiality which oxen, horses, and sheep have for it in pastures, are merits which distinguish it as one of the richest grasses for depasturing, on soils of a rich, moist nature. On soils, however, of light, sandy, and dry properties, it is of no value: the leaves become shrivelled up, the produce is not touched

by the stock, and unless the culms happen to perfect seed, the roots perish under such circumstances. It has, in the course of these remarks, been already mentioned that all the essential permanent pasture grasses grow more luxuriantly, and continue longer in the soil as individual plants, when they are combined with other species of the valuable grasses. It is the case with the present grass. There are no pastures in England celebrated for fattening properties, or for dairy produce, but contain a portion of this grass. The nature of the soil, as to whether it be inclined to moisture or to dryness, will determine the quantity of seed to be sown per acre in combination with others. This is a most valuable ingredient for water meadows. It is one of the grasses so highly spoken of in regard to the large produce of the Orcheston meadow in Wiltshire. Worlidge, who wrote in 1681, observes, "that at Maddington, in Wiltshire, about nine miles from Salisbury, grows a grass, *Poa trivialis, et Agrostis stolonifera var. latifolia*, 'which grass in some years grows to a prodigious length, sometimes twenty-four feet long.' The seed is ripe about the middle of July."

For the Plough, the Loom, and the Anvil.

HORTICULTURAL MEMORANDA.

There is nothing so fascinating about the cottage, the homestead, or the mansion, as a well stocked and highly cultivated vegetable garden, and its accompaniment, the flower-bed and parterre. With regard to the former, we have frequently trespassed upon the readers of the *Plough, the Loom, and the Anvil* with our crude ideas and forms of culture, which we doubt not, if faithfully put in force, will with ordinary energy prove a fruitful source of enjoyment for both the mind and the table. A copious supply of vegetables for the cook and housewife fills up sumptuously what would otherwise have appeared mean and meagre. We have to urge upon the fair readers of this volume the propriety of cultivating a taste and knowledge of the floral portion of the domain. Who does not admire Lilies and Roses, Violets and Mignonette, Pœonies, Pinks and Pansies—Forget-me-not, Love-in-a-mist, Honesty, Monks-hood, Love-lies-bleeding, Stock-jillies, Wall-flowers, and Jenny Lind Dahlias? These, with a hundred others of kindred associations, are no small inducements to form an intimate friendship for their culture, character, and management. The first secret is to get the names of your garden companions, and then you can have a delightful tête-à-tête with them on all occasions; without their names your interest and energies cannot be awakened in their favor to make "moments fly on golden wings." We subjoin the names of a few of the very best:—

White Lily
Japan Vanilla Lily.
Tiger Lily.
} Plant these in October, four inches under ground, in a well-dug soil incorporated with decayed leaves. They will bloom from June to August. There are three kinds of the Vanilla Lily: white, pink, and red-spotted.

Pœonia Whitlyii, white.
" *Reevesii, crimson purple.*
" *Pottsii, blush.*
" *humea, pink.*
} These can be planted any time in autumn or spring, in deep, rich ground. They bloom in May.

Pœonia arborea, double-flowered Tree Pœony.
" *papaveracea, poppy-flowered, single.*
} These grow into bushes three to six feet high, and are very splendid, flowering freely in the shade.

Violets. *Neapolitan, pale blue.*
" *Double, white.*
" *Monthly, purple.*
} These like rich soil, and will grow and bloom profusely in any situation. Plant them very early in spring. They flower from February to May, and the monthly has a continued succession of flowers.

Phlox, or *Mountain Pink.*
" *lactea, pure white.*
" *blanc de Neuilly, changeable white.*
" *Van Houttii, striped.*
" *speciosa, red.*
" *Charles, blush.*
" *Captivation, rose.*
" *odorata, purple.*
" *procumbens.*
" *subulata.*

These bloom from April to November, and combine every shade of color. They require rich, loamy ground, planted any time from November to April. They require dividing and replanting into fresh ground every three years.

What shall we say of Roses? Amongst six or eight hundred varieties, where are we to begin, and where shall we end? If I had a hobby and that hobby was a bed of roses, it would never, from my choice, contain more than fifty sorts, and those could again be reduced to bring them to the standard of perfection.

Rose Bourbon, Angelina.
" *Hermosa.*
" *Leveson Gower.*
" *Madam Bosanquet.*
" *Souvenir d'Anseleme.*
" " *Malmaison.*
" *Henry Clay, Boll.*

These are in color from nearly white to the richest dark crimson, and will be in bloom from early rose season till frost. All are perfectly hardy.

Plant them in very rich, light soil, any time from November to April; prune them in the winter season by thinning out the wood and shortening the shoots of the preceding year about half of their growth, applying a liberal supply of manure to their roots every winter. HYBRID PERPETUAL ROSES bloom about three times in the season, and are only desirable for the size of the flowers and very agreeable odor. They are treated in the same way as common garden roses, observing that as they are more frequent in their flowering they require more stimulation at the root, and severe pruning every spring to endure strong growth. The most distinct are Jacques Lafitte, rose; La Reine, lilac; Prince Albert, crimson; Lane, red; Youlande d'Arragon, rosy blush; Bocella, pale pink. Amongst Noisette Roses there are a few very distinct and worth particular attention. For a southern climate we advise to select Cloth of Gold, yellow; Triomph de la Duchesse, bright rose; Gold of Ophir, orange yellow; Lamarque, white; Sultana, crimson. Those for a northern climate must be more hardy in nature to resist cold. Such may be Fellenberg, red; Phillipart, peach-blossom color; La Nymphe, pink; Feastii, nearly white; Washington, pure white. In the culture of Noisette Roses pursue the same system as advised for Bourbons, giving the plants the support of strong stakes, or planting them at the foot of columns, around piazzas, or on arbors.

There are other two families of the Rose from amongst which a few can be selected for open air culture. Those are the *Tea* Roses for the South and the *Bengal* Roses for the North. Of Tea Roses we can confidently place Devoniensis, creamy white, tinged with blush; Antherose, white; Adam, rose color; La Sylphide, buff; Princess Maria, pink; Maréchal Bugeaud, bright rose; Triomph of Luxemborg, rosy buff. In Bengals, for a northern latitude, we name Agrippina, the prince of crimsons; Cels, blush; Queen of Lombardy, bright rose; Rubens, dark rose; Triumphant, changeable crimson purple; Saffrano, or yellow daily, yellowish buff. These varieties will give a perpetual succession of bloom throughout the entire season.

There are a few other hardy plants that require a passing notice. Of shrubs procure Wigelea rosea, rose-colored; Forsythea vindissima, yellow; Spirea prunifolia, double white; Spirea Reevesii, white; Spirea Douglassii, pink. Amongst plants that die down and come up every season, select Campanula nobilis, spotted; Plumbago larpantea, blue; Japan Anemone, red; Spirea lobata, pink; Crinum longiflorum, blush. The above selections will give a source of pleasure, with flowers in abundance the whole season, and may readily be obtained from Thorburn, of New-York, or Buist, of Philadelphia; and from any respectable seedsman procure small papers of the following annual flower-seeds: Sweet Alyssum, German Asters, Convolvulus minor, Imperial Pink, Chinese Double Pink, Rocket Larkspur, Double-branching Larkspur, Golden Eschcholtzia, Erysimum, Californian Sunflower, Candytuft, Sweet-scented Martynia, German dwarf stocks, four colors; Nemophilla or Grove Love; Drummond's Phlox, all colors; Petunia, all colors; Portulaca, all colors; Thunbergias to climb; Verbena vinea, Pansy and Mignonette. These seeds afford a great variety of colors and succession of blooming. Observe in sowing seeds to stir up the soil before sowing, which gives the seeds an opportunity to come up as soon as the weeds, from which keep every plant clear. Do not allow the plants to stand nearer to each other; keep them at least six inches to a foot apart; they grow stronger and flower finer, and will freely display their beauties from early spring to the colds of winter.

DR. SPARKMAN'S REPORT ON THE CULTURE AND PRESERVATION OF THE SWEET POTATO.

The Committee appointed at the last anniversary meeting of this Society, to consider and report "on the best mode of culture and preservation of the sweet potato," have endeavored to obtain practical information from the most experienced and successful planters of this State, and with a view of comparison as to results, have also extended their inquiries to most of the Atlantic, Middle, and Western States.

Much interesting matter has been obtained orally, by correspondences, and by references to various agricultural periodicals, which your Committee find it difficult to condense within the ordinary limits of a report. They have endeavored, however, touching matters of *general* interest connected with their investigations, to be clear, concise, and practical.

The convolvulus patatas, or sweet potato, may be traced back to the 15th century. Mention is made of it by Gerarde, and allusions by Shakspeare may be found in his "Merry Wives of Windsor," act 5th, scene 5th, and also in "Troilus and Cressida," act 5th, scene 2d. (See Exp. Notes, in Boston edition, by Hilliard, Gray & Co., 1836.)

Professor Smee says, "About the year 1600, and for some time after, the convolvulus potato is spoken of as the common potato, and our present potato (the Irish) is noticed as the new potato from Virginia. Now the tables are completely turned; the sweet potato is become the scarce one, being worth nine pence a pound, and frequently not to be procured, whilst the other is in every day use." During the fifteenth and sixteenth centuries, the markets of England were chiefly supplied by importations from Spain and the Canaries. We have been unable to trace the potato back to its nativity, or to note the full extent of its cultivation, geographically, but there is ample testimony, that it may be grown in all temperate latitudes, and abundantly in all warm climates. In Great Britain they are produced by artificial heat, but in the southern portions of France and Austria, they are raised sparingly in open grounds. (See Notes on European Ag. So. Cab. 1840.)

The Irish potato, (solanum tuberosum,) introduced into England by Sir Walter Raleigh, in 1586, was then believed to be a native of Virginia. It is now determined to be a plant of South America. It grows wild in Chili and Peru, and is usually found

in steep rocky places, where it could never have been cultivated. It is further stated by Professor Smee, that "the present Irish potato is an abnormal deviation from the wild or native plant, and upon the authority of Moline, it is asserted, that the natives distinguish the wild potato, of which the tubers are small and bitter, from that which has been cultivated for a long series of years." Whether, like the solanum, the present varieties of the convolvulus potato are abnormal deviations from the native plant, improved by culture, we are not able to decide, but the conjecture is highly probable. *In many of the Northern States this root is believed to be the peculiar growth of the Carolinas, and is found in their markets as the "sweet Carolina," derived no doubt from the fact that it has been more generally appreciated, and successfully cultivated in these States than elsewhere.

Of later years, however, since the emigration of our citizens to the more Southern States, its cultivation has been extended, and it may now be found from Georgia to Louisiana. In all this region it is quite productive, and although in many instances it is only valued as food for all kinds of stock cattle, the planters are becoming more alive to its importance as a *provision* crop for their people, (especially their little negroes in summer and autumn, when all provision grains are more or less depredated upon by bugs and insects,) and have been directing special attention to the "best modes of preservation." The root varies somewhat in character in different soils and climates, but as there are many varieties of the sweet potato, all of which are highly productive and nutritious, your Committee respectfully suggest that a little observation and attention to the adaptation of soil for the growth of any given variety, might materially favor both its cultivation and preservation.

The yam is conceded to be in the greatest perfection immediately upon the sea-board, while the Spanish and leather coats, highly valued in the interior of North Carolina are equally fine in the middle and upper districts. The Bermudas, or white reds, (red skin with white heart,) though with us particularly adapted to the yellow sandy soil which skirts the coast, is also a favorite in Georgia, Alabama, and the West Indies, and is preferred in the more northern latitudes in which it is grown.

With the view of comparison, (as before intimated,) your Committee, during the past summer, through their chairman, addressed a circular to various distinguished agriculturists in this and other States, asking information upon the most important matters connected with their appointment. The information received, in answers thereto, shows a result highly creditable and gratifying to the planters of Winyaw and All-Saints, who have not unfrequently borne the reproach of not being "*a farming people*," or in other words, of being behind their neighbors in the cultivation of any thing excepting rice. We find the potato crops of this district equal to, if not more abundant than those of any other section, and that too with a disadvantage as to soil, most of our uplands being naturally poor and unproductive. In the more Southern and Western States, where corn is an abundant crop, compared with that grain, the potato crop is about as two to one;† but it should be mentioned that, with few exceptions, the system of manuring their potato lands is little known and seldom practised. With us in the rice region, where our corn crops scarce reach an average of twenty bushels per acre, and where the maximum average on a few favored and highly cultivated plantations has never exceeded fifty-five to sixty bushels, we have received returns of potato crops averaging from two hundred to seven hundred bushels per acre; and in one instance a yield of one thousand bushels per acre is authentically reported to have been made on Black river. (See Report to this Society on Manures, by Dr. E. T. Heriot, 1848.)

We will now give the answers to the interrogatories made by us, in the order in which they were propounded.

1st. Soil. What kind to be preferred?

This depends much upon the character of the manure, or fertilizing ingredient to be used. All planters agree that a rich, high, dry, *sandy* soil, is well suited to the culture of the sweet potato; but various experiments have proved satisfactorily that stiff clay or alluvial soils, when liberally supplied with a *silicious* material, such as oat or rice straw, will produce more abundantly than the best sandy lands. Colonel Bludworth (formerly of North-Carolina, now of Louisiana) says: "Deep loam and

* In the uncleared swamps of South-Carolina is found a convolvulus plant, resembling in its vine, leaves, and blossom, the commond red potato. The root is small, tough and fibrous. Our negroes call it the Indian potato. We are not aware of any attempt to improve it by culture.

† What does this mean?

old alluvial soil yields more than the best uplands." We recommend, therefore, for the yam potato, old alluvial loam sand *if thoroughly drained;* but for reds of all kinds, a heavy yellow sandy soil.

2d. Manures.

We may enumerate all green crops listed or ploughed under, oat and rice straw, and stubble, pine trash, salt marsh, marsh mud, cotton seed, lime, composts, &c., especially when trampled and incorporated with the droppings from sheep, hogs, horses, and cattle.

How and when applied? In corn and cotton regions movable cow-pens are universally recommended, claiming the advantages of spreading and incorporating the manure more regularly and uniformly, and saving the labor of carting. New lands, or those which had been fallowed the year previous, are selected as being less grassy. The cow-pens are passed over from four to six months previous to planting, and the ground well broke up with the plough as soon as the pens are removed. When this system has not been premised, the land should receive two listings—the first very light, drawing into a list or ridge whatever growth there may be; and the second taking the superficial earth from the alleys with the view of getting all the grasses and their seed under the bottom of the beds. Well rotted manure is then applied, broadcast over the whole surface, or spread in a drill on the list, the alleys thoroughly broken up with the plough, and the beds made up with the hoe when ready to plant. When cotton seed has been used, two to three packs have been found sufficient for each half acre row. Roots do not require as rich a soil as slips. They do best with old well rotted manure; slips grow freely on new lands with fresh manure.

With us the plan of cow-penning is impracticable, as large stocks of cattle are found unprofitable on rice plantations. A little system and attention, however, to our stable yards, and the stationary pens of our work cattle, has done much for the improvement of our high-land crops; much more may be done by making the accumulation of manure a part of the economy of every plantation. Where rice straw (our chief dependence) is used without being trampled by cattle, it should be applied liberally and listed in as early as possible—always after a good shower, or when the land is wet. When the ground has been cultivated the year previous, in some other crop, it should be ploughed up flush, and a deep, bold, open furrow then made at the distance required for the beds. The straw is placed in this furrow, and partly bedded under with the plough; the hoe completes the bedding just before planting The tailings or winnowings from the rice crop is better than the straw and is usually set apart expressly for the potato field.

3d. Mode of culture.

Potatoes may be grown in hills or beds—in both they are equally productive. Beds are preferable, however, as they are more easily worked, and are less likely to be washed down by heavy rains. Various distances have been tried, from two and a half to six feet—preference is now given to the medium distance of four and a half feet from centre to centre. Time of planting—red potatoes for early use, the first good season after 20th March. Yams and others from 10th to 25th April. A correspondent from Ohio (So. Ag. 1841) says, that for many years his crop was planted in hills, placing three to four potatoes in each hill, and that he had fine, strong, luxuriant vines, but no roots. By putting only *one seed* to each hill, his crop was abundant.

In beds, a drill or trench should be made upon the top, the seed placed six or nine inches apart, and covered two to three inches deep, according to soil and season; the earlier plantings deep, especially if the soil is light. "The seed should be pressed down firmly with the fingers into the bed, and *fresh moist earth from the alleys* drawn carefully over them, instead of the usual slovenly mode of scraping the loose dry earth from the side of the bed." This earth from the alley (always more free from grass seed) should be pressed firmly upon the seed with the hoe, by which process the top of the bed becomes flattened, and may, if very wet, form a crust or hardening of the surface, through which the young sprouts will grow with difficulty. To obviate this, a second hand should follow the one covering the seed, on the opposite side of the bed, and haul up from the centre of the alley as before, bringing the top of the bed to a ridge or point, without compressing it. This renders the first picking of grass (the most important working of the crop) easier and more effectual.. In connection with this, we would recommend, from our own experience, that each hand, when *picking* grass, should be supplied with a basket for the removal from the field of every blade that is picked out. In showery weather, or where the land is not quite dry, and the sun very hot, grass that is picked

from the top of the bed, and left on the side, or thrown into the alley, will again take root and increase the necessity for the early use of the hoe.

As to cutting the seed, planters are equally divided in opinion. All agree, that the vines are earlier, stronger, more vigorous and luxuriant from seed planted whole. In a very dry season, a stand is also more certain; but many contend, that the product of the crop (cæteris paribus) is in favor of the cut seed. They argue, that unsound seed will never bear well, even though a sprout be put forth, and that under the process of bisection they are detected and rejected; whereas, under the plan of planting whole, they are frequently overlooked, and of course, either fail in coming up, or in the product.*

The experiment has not been tested *accurately* by measurement, and the practice of dividing the seed may have originated in their scarcity. The largest crops reported, have been made under both plans. With the Irish potato, the gain of product in favor of the whole seed was one hundred bushels per acre, in an experiment accurately made in Connecticut, and reported in So. Ag., vol. 9th, 1826.

We recommend, therefore, in deference to all authorities, that for early eating, and for early vines, the seed be planted whole, for the general crop; when the seed are *scarce*, or *larger than necessary*, they may be divided, but into not more than two parts

In cultivating the crop, the tops of the beds should be picked and kept clean of grass and weeds, until the vines cover and shade the surface. The first show of grass on the sides should be destroyed by the hoe, and the beds hauled up the day after, selecting, if possible, a dry time for the work. After the second hoeing of the sides, the plough should follow, one furrow on each side being thrown from the bed, so as to cover all the grasses that have been hauled down by the hoe into the alley. From three to five days after, the plough should again pass through, throwing the earth back to the beds, and breaking up the alleys as deeply as possible. This work of "ploughing down and up" should be done as the vines are extending into the alleys. The hoe must be resumed for completing the process, by hauling the beds up to their primitive size, care being taken to lift the vines, and spread them along the tops of the beds, without bruising or covering them. Any bunches of grass that may survive this dressing, should be pulled up before the tubers or small potatoes are formed.

Slips should be planted the first good season after the vines are strong enough. The land should be highly manured, well ploughed and laid off in beds, at the distance of four and a half feet. In a good season, three vines laid carefully upon the tops of the beds about two inches apart, will do best; if the season is either doubtful or dry, put four or five vines, (to insure a stand,) and bank heavily with fresh earth from the alleys, every alternate twelve or fourteen inches. To secure seed for the ensuing crop, a few vines should be planted late, say first of August. The best seed are procured by planting vines from vines, viz.: the growth of the vines of the first or early plantings; they will be small but *round and not stringy*.

With the view of increasing the productiveness of this crop, it was recommended in 1836, by a correspondent of the *Southern Agriculturist*, that as soon as the vines had taken root, and began to grow, they should be cut through with a hoe or spade, by chopping across the beds mid-way where the earth is banked. It was asserted, that the crop would be nearly doubled, "as tubers or roots would be thrown out at each divided end more numerously, as always appeared at the butt ends of the vines at the beginning of each row." By request of my venerable friend, Dr. Joseph Johnson, of Charleston, I had the matter tested during the past summer, on my own place, and obtained the co-operation of several neighbors in the same experiment on their places. The plan adopted was to cut the vines of every alternate row in a given half acre of land. The result was found unfavorable.

4th. Productiveness.

Upon the poorer class of sandy lands, the potato crop is the most productive that can be grown, being by weight five to fifteen times greater than corn.†

Of roots, a good average crop is from two hundred to three hundred bushels per acre—of slips, two hundred to four hundred bushels. Where the system is practised of "manuring highly, and planting less," these figures may be doubled. Alluvial soils, formerly considered unfit for the growth of this crop, are now in high repute, in many sections of the country. The experiment was tested with vines in this district about twenty years ago. A rice field was bedded up in the winter, and

* A good *sound* reason.

† Suppose corn as well manured and cultivated.

planted in oats, which matured well, and were harvested in June, and in July the beds were reversed and planted with vines.

The field was well drained the whole season; the product of this crop entirely satisfactory. Since that period it has been a part of the care and economy of the Sandy Island planters, (who have no uplands that will compensate for the labor,) to appropriate a small portion of their swamp lands annually for this most valuable provision crop, and where the field has been well drained, they have never failed in their expectations.

A similar experiment was made with roots the last year, by Mr. Joshua W. LaBruce, of Sandy Island.

After bedding up five feet apart, in the month of April, he planted one acre in yam potatoes, the remainder of the field being fallowed for the destruction of volunteer rice. Before the sprouts of the potatoes had come through, the alleys and sides of the beds were thickly covered with rice straw, so as to shade the land completely. What grass came up on the tops of the beds was picked out from time to time, by an aged and inferior hand, and the crop was made without any additional labor. In harvesting the product of several rows was measured, and the smallest yield per row, of one hundred and forty-five feet in length, was seven and three quarter bushels of good eating potatoes, as sound and well flavored as are grown on the best uplands. The single acre is thus computed to have given five hundred bushels, being equivalent, *as provisions*, to one hundred and twenty-five bushels of corn, and to two hundred and fifty bushels of rough rice.

This plan of strawing upon high lands is strongly recommended, especially where pine straw can be gathered conveniently and abundantly. For both roots and slips, it possesses advantages in keeping down grass, retaining moisture, and preventing the injurious effects of heavy washing rains, succeeded by a scorching sun. The labor of collecting and bestowing the straw may be regarded as equivalent to the working of the crop; but whatever benefit is derived to the growing crop must be doubly shared by its successor in the increased fertility of the land. Although the potato makes a large return to the soil in its leaves and vines, and is generally esteemed highly recuperative to the land, it is well known to be a very exhausting crop, and the same ground should not be planted in roots more than two consecutive years. In one instance, after thirteen years' culture, without change or rotation, even with the addition of seven hundred to eight hundred bushels of compost manure, the crop failed entirely. The same resulted with oats and slips after ten years. (So. Cabinet, 1840.)

Mr. Tuomey, in his Geology of So. Ca., asserts from analysis, that every one thousand pounds of corn takes from the land but five and a half pounds, whilst every one thousand pounds of potatoes takes seven and a half pounds of their respective constituent fertilizing ingredients. It is also said, that a bushel of potatoes, fresh dug, will weigh from seventy to eighty pounds, and Col. Bludworth "once pulled up the vines from a single hill, from which were hanging sixteen good potatoes, averaging one and a half pounds;" he also recollects seeing a single potato raised on old river bottom soil, weighing ten pounds; from all which it may be readily conceived, how indispensable to rotate this crop, even on the best lands.

5th. Varieties of the potato—which preferred.

There are several varieties of the red, and two or more of the yam, as well as the Spanish. We are also familiar with the Scotch or leather coat. Of the reds, the Bermudas or white hearts, the brimstone, Mexicans, Africans, &c., all have their friends and admirers.

We prefer the Bermudas for summer use or early eating, as being most wholesome, early and productive, and the white yam for a general crop. It is very productive, nutricious and well flavored, and is the most easily preserved. The leather coats are the most productive in *very poor sandy land*, and are preferred by many of our sand-hill farmers. The African (red) keeps well, and is also productive, but not as early as the Bermudas.

6th Preservation.

It is a well known fact, though unexplained, that root potatoes do not keep as well as slips, or tubers grown from the vines. I will not detain the Society with the many interesting speculations and comments on this point, but simply notice what is stated as the experience and practice of some of the Alabama planters. "They show that roots may be preserved as long as slips, *if they come in as late* and are put up in *hills*." They recommend that roots be planted at different inter-

* Is there any analysis of the sweet potato?

vals from the last of February to the 1st of June, so as to have a succession of crops, which, to some extent, meets the contingency of a failure in an *early slip crop.*

The difficulty of preserving this crop does not arise, as is supposed by many, from its being housed at an improper time, either too early or too late; nor, as is believed by some, from a want of care in selecting and rejecting such as may be cut or bruised in gathering them; nor, as is assumed by others, does it depend upon the soil being too rich or too poor, or the season too wet or too dry. All these supposed causes may, possibly, exercise some influence, but the immediate and direct cause of rot is *sudden fluctuations of temperature.* The only secret, therefore, of preservation, is to keep them at a moderate but *uniform temperature*, insensible to the vicissitudes of weather—insensible to the changes of heat, cold and moisture. Slips made in alluvial soil, or low wet grounds, keep just as well as those grown on dry sandy lands. In one instance we witnessed a crop harvested on the rise of a freshet, when the water had gained so as to cover the surface of the land; and although a large portion of the crop was taken out of the water and removed immediately, while wet, to the cellars, they kept quite as sound during this season as they usually do under the most favorable circumstances.

Three plans are in use for the preservation of the potato, viz.: in hills, in cellars, and in framed buildings. The first is to select a dry sandy spot, all vegetable matter being removed from the surface, for several feet around; to plant a pole or stake in the centre around which the potatoes are piled up conically, from twenty to fifty bushels to each hill or pile; then to be thickly covered with clean dry pine straw, over which a second covering is made with corn stalks or pine bark, and the whole heavily banked with earth. The pole or stake should be drawn up after banking, and the air hole or ventilator thus kept open by a loose covering of bark or straw for several days, but to be securely closed over before cold weather sets in. This plan succeeds well where the banks or hills are sheltered by scaffolding from heavy rains and freezing weather. It is impracticable, however, for harvesting a large crop, and we can only advise it as *the best method for keeping seed slips.*

The second plan, in cellars, is the one most generally adopted. A high dry spot being chosen, a centre string-piece raised from six to nine feet, and supported by posts set in the ground, is firmly fixed, and rails or puncheons resting upon this, are extended down and around on either side, giving a diameter to the cellar of fifteen to eighteen feet. The length, to suit the size of the crop, from forty to one hundred feet. Corn stalks and bark are placed over the rails, and the earth banked heavily over this—the top being protected by bark or a ridge board.

Many minor matters of detail are to be observed under this plan. The cellar should be built of seasoned rails, or puncheons, (not those fresh split from green timber;) it should be erected two or three weeks before the crop is housed, and a fire kindled in it every day to exclude all moisture; it should have a southern front, and the rails should extend eight or ten feet beyond the entrance or door, to prevent the access of driving rains, to give shelter for the watchman in charge, and to allow room for kindling a fire on the outside. The slips are to be dug (after a frost sufficient to check vegetation) on a sunny day, and are to be placed in the cellar *before sundown*, so as to escape the dew. They must be piled carefully, avoiding any pressure against the rails around the foot of the bulk, and all that are cut or decayed in any way, placed in a corner to themselves.

In addition it has been recommended, by some, to sprinkle dry sand among them, as they are brought in, with a view of absorbing any moisture that might arise. Others, again, pursuing the opposite extreme, dash them with cold water to prevent their heating, and the friends of both these recommendations claim great success. In our judgment much more depends upon the particular season than upon any special mode of treatment.

The experience is universal that in a moderately cold and dry winter, our crops keep well; and in sultry unseasonable weather the loss is great. To this rule there may be individual exceptions; but we hazard nothing in asserting that they will be found among the shrewd practical observers, who adopt the plain teachings of nature in keeping their cellars open and cool in warm weather, close in cold, and as dry as possible (by smoking) in damp weather. The objection to this plan is chiefly in the annual or biennial expense of building.

Where timber is already scarce, and daily becoming more so, we are forced almost necessarily to the adoption of the third plan of erecting framed buildings.

Brick cellars have been tried but soon abandoned, in every instance that has come to our view.

Framed buildings have been used about five and twenty years. A correspondent

of the *Southern Agriculturist*, (vol. 2d, 1829,) describes one which he had erected two years previous, and which had succeeded to his entire satisfaction. He says, "The house is forty feet long, twelve feet wide, and eight and a half feet high to the top of the plates; it is framed in the common manner of houses, roofed in the usual way, with good cypress shingles; the posts are set in the ground, they are several inches thick, with a groove near the inner edge to receive puncheons one inch thick, split like rice barrel staves; it is weather-boarded with inch boards, between which and these puncheons on the inside is a space of four inches filled with well tempered clay, forming a close wall supported and defended from weather by boards without, and the puncheons within. One door in the middle of the southern broadside, no other opening in the house. The interior is divided off into four compartments by the same process of filling in with clay, and the loft is covered with rails and filled in with straw. No ventilators or air holes are requisite. The door kept closed as constantly as practicable, both to shut out the external air and in compliance with a recommendation from Cobbett to exclude light from roots and vegetables when housed."

In this and the adjoining Parish, framed cellars are built pretty much after the foregoing plan, excepting the walls of clay. They are made from fifty to one hundred and fifty feet in length, about fifteen feet wide, tightly weather-boarded and shingled. Spouts or ditches (covered loosely with boards through which are many auger-holes made for the passage of the smoke) extend from a pit some few yards removed from the cellar, and ramify under the potatoes through the entire length of the building. Every damp day, for several weeks after housing, a smoke is thus forced through them, and in very cold weather the top of the bulk and around on the sides is thickly covered with straw to meet the change; and if the weather becomes warm, the door is opened to allow a free circulation. This plan succeeds well, and your Committee believe that it will be generally adopted as the most economical, and therefore the *best*, that they can advise. We have seen framed cellars which hold 30,000 to 40,000 bushels, and the proprietor informed us that his potatoes kept perfectly sound even though crowded together in such large numbers.

We have also seen a cellar constructed by R. F. W. Allston at his Nightingale plantation, with a thatched roof, in which during the past winter the crop was kept in excellent preservation.

The Chairman takes leave to acknowledge his obligations to all who have aided him by contributing the materials for this report, but especially so to Dr. Joseph Johnson, of Charleston, and Mr. Charles H. Mason, of Indiana.

Respectfully submitted. Jas. R. Sparkman, *Chairman.*

April 18th, 1850.

AGRICULTURAL CARRIAGES.

On a farm of 1000 acres of good land, cultivated on the four-course, or Norfolk system of cropping, there will be probably 200 tons of hay made per annum, which, we may suppose, will be carried on an average three fourths of a mile to the rick: supposing one half of the roots to be harvested and carried to the yards for consumption, there will probably be 2000 tons of roots carried three fourths of a mile: there will be 1000 tons of grain in the straw carried three fourths of a mile to the stack-yard: there will be probably nearly 400 tons of grain carried 10 miles to market: there will be some 40 or 50 tons of food or manure carried home that distance from market: and there will be nearly 4000 tons of manure every year carried three-fourths of a mile, from the yards to the fields. The subject of agricultural carriages may thus well be considered of importance to the business of such a farm. Adding up the above items, we have a total equal to nearly 10,000 tons, carried a distance of one mile; and if to the weight of the load there be added, in each case, that of the vehicle as well, which in the case of a field carriage will be found equal to fully 60 per cent. on the load, we obtain the amount of 16,000 tons carried one mile, as the labor of this kind executed, per annum, on a farm of 1000 acres. But this amount must be still further increased, for an empty carriage* returns for every full one that goes; and supposing our estimate at 60

* The forty or fifty tons of return carriage from market are not referred to here; but this small inaccuracy will not materially influence the result.

per cent. on the load fairly to represent the weight of the conveyance, we must add to our former amount 6000 tons carried one mile, on this account. Now the labor of carriage on fields and farm roads may be assumed equal to a lift of one eighth of the load. To pull 22,000 tons one mile along the surface of the field or road, will be nearly the same as lifting 2750 tons one mile high. Now the working year may be supposed equal to 250 days, of ten hours each; but a horse in a cart is not continually moving; it is at rest during the operation of filling and emptying, and therefore the time, per annum, in which it could be engaged in actually shifting the material it has to convey, cannot be put at more than three fourths of the above, or 250 days of seven hours and a-half each; and a little calculation will show, that to lift 2750 tons one mile high, in 250 days of seven hours and a-half, requires a continual lifting of 290,000 lbs. per minute. This, according to Watt's estimate of a horse power, represents the constant labor of nearly 10 horses. And if we take the period during which there is most hauling, and ascertain the quantity of labor of this kind which must be done within a given time, in order that the ordinary routine processes of cultivation may be carried on, we shall find that the labor of carriage alone necessitates the employment of quite if not more than one half of all the horse labor the farm employs.—*J. C. M., in Morton's Cyclopædia of Agriculture.*

AGRICULTURAL EXHIBITIONS:

OUGHT TO PROMOTE INQUIRY AND DELIBERATION, AS WELL AS SIGHT-SEEING.

There is, in the last *American Farmer*, a capital paper on this subject from C. P. Holcomb, Esq., of Delaware. His suggestions are excellent and exceedingly well put: but alas! until we have a radical reform in our systems of education for farmers' sons, leading them while young to look on Agriculture as an intellectual pursuit, requiring peculiar and *appropriate* instruction and training; until *that* bent is given to the mind while yet in the gristle of its formation, it will be found that men, mere children of a larger growth, will continue to take much more pleasure in the use of the *eye* than of the *understanding*—of the senses than of the mind. Yes, truly, it does look absurd enough to see grown men, coming from all parts of the State, and from beyond it—men well known for their practical knowledge and for the possession of much useful information, founded on the best of all knowledge, experience—to see a body of such men (conjunctions so rare) coming together as at Baltimore, and then spending their whole time, when not on the show-ground, spouting and discussing unimportant details with as much earnestness as if the welfare of Agriculture and Empires hung upon the issue.

Well was it said by Mr. Buffin in his late address, that the great progress made in Agricultural Improvements within the last thirty years "is *mainly* due to the diffusion of Agricultural papers. In the actual absence of all other means, these publications, *almost alone*, have rendered good service in making known discoveries in the science, and spreading knowledge of improvements in the art of Agriculture." If, indeed, such farmers *could*, when brought together, persuade themselves to pass even two or three days—not to indulge men in speech-making for the sake of hearing themselves talk—but for deliberation and useful inquiry into the experience of practical men, and to learn the facts which their experience had established, it would do more good in awakening the mind and diffusing useful knowledge, than a dozen exhibitions of bullocks not *much*

larger, and sheep not *much* fatter, and horses not *much* handsomer than such as have been seen a thousand times before.

In fact, where knowledge is only to be imparted and the progress of Agriculture is only to be indicated by *exhibitions*, once in three or in five years would be sufficient to show all that is actually new and illustrative of positive progress in Agriculture—that is, progress to such an extent, and in such variety, as to justify the trouble and expense of a Public Exhibition.

The most important improvements, and such as are most likely to occur, take place in the department of *Implements;* and the least observable, from year to year, takes place in that of *Animals.* In this last, what was there at the last, that was not seen at the first of these State Fairs? Was there any visible advancement in the qualities of the horses, cattle, sheep, or hogs? It is even questionable whether, if exhibitions were held once in three, or four, or five years, they would not be more enduring in themselves, and in their good effects, marking more distinctly and instructively the progress of improvement—a progress not to be measured by months or years, but by periods of years. And then for any intermediate improvement in implements, the implement maker, with the aid of the engraver, when necessary, can always diffuse widely a knowledge of such improvements through the agricultural press. After all, and that about which there can be no dispute, it may be asserted that no Father honestly discharges his duty to sons whom he intends to follow the business of agriculture, who does not use his utmost exertions to provide for them that *sort of education* which is best adapted to enlighten and qualify them to push their business with the greatest efficiency. Neither does any farmer do his duty to himself becomingly, who withholds from agricultural periodicals that patronage which all farmers bestow on the papers of the *party* to which they *belong*, be that party which it may.

Mr. Holcomb, in the excellent paper to which we have referred, would seem to take a nice distinction between the "Canada reciprocity" question, and the general question of protection to American industry, which even he would seem to repudiate, as a political question not proper to be entertained by societies expressly established to guard and promote the interests of Agriculture. Now, we would like to know how one of these questions could be discussed without running into the other? The fact is, that this reciprocity question is only *a case in point.* The difference between that and a more general view of the protection question is, that *it* serves to bring the whole theory of free trade to a *practical issue.* It brings the whole question up, and it brings it home; and the only reason why *it* commands more immediate attention is, that it happpens to prick us in a more sensible part. It is seen and felt at once to *touch the pocket nerve!* and if the free admission of Canada wheat touches the pocket nerve of the Delaware and Maryland wheat-grower, so does the admission of iron and cloth, made by pauper labor, and admitted under ad valorem duties, founded on fraudulent invoices, touch the pocket nerve of the American makers of iron and cloth—puts out their furnace fires, stops their mill-wheels, and converts the men at work in them, who were good *customers* to the Maryland and Delaware wheat-growers, into *rivals*, increasing every where the quantity, and diminishing the value of agricultural products to be consumed, while diminishing the power to consume; arresting the progress of agricultural improvement, for which these very societies are formed, and spreading deterioration and ruin far and wide.

The naked truth is, that the whole question of protection and free trade is one that *most peculiarly belongs to Agriculture*, and to those who *associate* for its welfare. It is one that it becomes farmers, of all people, to look into, to discuss, and to judge *for themselves:* not in the vulgar contracted spirit of *party*, and of sordid calculation as to its bearings on the acquisition of party power, but as a high, lofty national question, to be understood and decided upon its own merits. The policy which tends to separate consumers from producers, interposing between them wide spaces of sea and land, much expense of time and transportation, wagons and ships, factors and porters, is either good or bad for the producer, and *that* is *the* question which American cultivators have now to decide—not as Whigs or Democrats, but as free-born AMERICANS.

Diminished consumption, which always diminishes value, acts as a clog on improvement, as it impairs the inducement to produce; whereas increasing demand, keeping pace with increasing power to consume, accelerates improvement of every art, whose products are thus rendered more valuable, by stimulating the motive to increase production. Thus, encouragement of home industry may be considered as in fact *synonymous* with advancement in Agriculture and the useful arts.

If the people could throw off the party hacks by whom they are ridden, and leave them lying stunned on the ground long enough to allow them to look into this question for themselves, it would be as impossible to resist the force of truth as to stop the progress of light, when morning follows night.

It strikes us, that a good way to come at Mr. Holcomb's object would be, for any member of the Society to hand up to the Chair a particular question that he wished information about, and he might designate the person that he presumed could best answer it. The President might use his judgment in the selection of these questions, with the understanding that the answer would be brief and to the point. This, perhaps, would prevent confusion. Mr. Holcomb, it seems, was disappointed in his very natural and laudable desire to have the Society unite, as such, in a remonstrance against the Canada reciprocity bill, and he accordingly thus concludes his communication :—

We must hope for the defeat of this measure, so warmly pressed by the British Minister and the New-York merchants. But if it is defeated, we can take no credit for it; it will be done by our Representatives, more true to us than we are to ourselves. I instance this to show what I consider a case of *over-much caution*, a degree of fastidiousness, that if carried to such extremes, may deprive the Society of much of its usefulness. But the just medium, when we become better acquainted, and our honest views are better understood, will easily be arrived at. While we agree to sink the politician, we will not, I trust, be without the *esprit de corps* that should unite us as agriculturists.

GREASE FOR CARTS, &c.—The following composition is recommended by a writer in the *Indépendance Belge* for greasing carts and other agricultural implements:—Take 4 lbs. of caoutchouc dissolved in a proper liquid, 1 lb. of gelatine, 10 lbs. of carbonate of soda, 45 quarts of animal or vegetable oil, and as much water; boil the water with the carbonate of soda and gelatine, then add the caoutchouc and the oil, stir the mixture well until it forms a homogeneous liquid. The above proportions may be varied, and if the caoutchouc and oil are previously purified, the carbonate of soda is unnecessary. The above mixture will be found very useful not only for greasing carts, &c., but also for keeping the farm harness in order.—*Flores des Serres.*

PLAIN DIRECTIONS FOR PLANTING AND CULTIVATING PEACHES.

A Subscriber proposing to settle near Mobile, Alabama, and cultivate peaches for that market, requested information as to the management of that fruit in Delaware, where its cultivation has become as extensive and successful, comparatively, as in New-Jersey.

The following is the answer to such inquiries as seemed best calculated to elicit the information desired. How beneficial to the community that the conductors of public journals should have it in their power to resort in such cases to men animated by the spirit to impart, as well as to seek and profit by the results of the most enlightened experience.

Wheatland, 26th Dec., 1850.

Mr. J. S. Skinner :

Dear Sir :—In reply to your request asking detailed information on the subject of *Peach-growing* in Delaware, I send you the following from Philip Reybold, Jr., who is the most extensive and reliable nurseryman in this section of the country. He says:—

1. He prefers the stone of the natural fruit; thinks they are more hardy and grow off better.

2. There is no reliance upon the seed of the Peach reproducing its kind. It is in that respect like the apple, or other orchard fruits.

3. Seed are best preserved by drying them in the shade where they are protected from the sun and rain. They may lie two or three inches thick by a little attention in keeping them stirred. In three or four weeks they may be put away in barrels or boxes, and if perfectly dry they may be kept two or three years.

4. The seed of 1850 may be prepared thus: About the middle of May, 1851, excavate a trench, or bed, for convenience say four feet wide,* three inches in depth, and of sufficient length to hold the quantity of seed you wish to plant. At the bottom of this bed place the peach-stones, close by the side of each other, *but only one seed deep;* then cover with the same earth that was taken from the bed, well pulverized, throwing the finest in first on the seed. Then let the bed remain *undisturbed,* without any other cultivation, or *weeding,* till the spring of 1852. The seed-stones will then be fairly open, some with sprouts from one eighth to one inch long. If the weather is warm in winter, cover the bed with straw or litter of some sort, so as to prevent sprouting too early. Keep them back somewhat, as we did the eggs of the *silk worm* in times by-gone, till ready for planting. For the nursery, the ground should be prepared *well* as for corn. Then strike out four feet wide, and *plant* your *seed* in the rows about eight inches apart; cover carefully with the hoe about two inches deep. The man that covers shou'd walk on the row, so as to press the dirt close on the seed. Here Mr. Reybold called my attention to what

* Our recollections go back further to observations made about agriculture and horticulture, rabbit-hunting, squirrel-shooting and trap-setting, than to any other subjects; and we remember well that the best nursery we ever saw of young peach trees was raised by our father, the late Frederick Skinner, of Calvert County, Maryland. The peach stones were sprinkled thinly in an old square plank bee-hive, with alternate thin layers of peach stones and fine earth, until the hive, perhaps two feet long, was filled. The hive was then buried in the garden, and remained through the winter. In spring it was taken up, and the stones had burst and the kernel was ready for planting. We don't remember that the kernel was taken out from the stone as here prescribed, for the whole process was noticed only as a boy's idle curiosity leads him to be peeping into whatever is going forward when he ought to be learning his lessons. But we remember that every kernel took root and produced straight, beautiful, healthy looking young trees.—*Ed. P., L., and A.*

he called a small but important matter, from an inattention to which he had suffered in his products, at least, the three first years of his practice. In taking up the seed from the bed in which they have been planted, have a sharp shovel in a careful hand. Scalp off the covering of the seed, but not so close as to disturb them. Then turn up the seed with the shovel by running it under the seed, and when so turned over the seed are to be taken up carefully with the hand, and to be carried at once to the planting ground or nursery, and put in as before described. All seed taken up should be planted the same day, as frost of the night or hot sun might injure the germ. The *kernels only* are to be planted, no part of the *hulls*. After thus planted in the nursery, then cultivate and keep clean, as for corn or other garden or field culture; not to be transplanted, but remain here two years, when they are ready to plant in orchard. The seed will come up in about six weeks.

WHEN TO INOCULATE, OR BUD.

In August or September, the later the better, the first year after planting. Buds for inoculating with should be selected from healthy trees. *No trees* which show symptoms of *yellows*, or *decline*, from any cause, should be used. You ask what kind of fruit is best to bud from. Bud from the catalogue here sent; it embraces eighteen varieties of *choice fruit, easily distinguished*, and comprises the best and only *necessary varieties* required for the Philadelphia or New-York markets. The Peach of the open varieties are preferred now as of the olden time of which you spoke. Indeed in New-York a Cling, except for preserving, is seldom inquired for.* Healthy Peaches of the Early Troth variety will be ready for market from the 3d to the 6th of August; the Peach market lasts about two months. Of the selections here recommended some of the varieties are constantly ready for market, in the order in which they are numbered.

Budding should be done late, so as to finish while the sap is in the wood, but not so early as for the bud to start growing before the next spring.

The spring after budding cut the top from the young tree close above the *bud*, and be particular to keep all *natural sprouts down*, allowing *nothing but the bud* to grow, which will attain from five to seven feet the first year. Prune nor trim none, unless in case of deformity in the young tree.

After the tree has got its growth, in September or October, trim up to the shape you wish it to grow, say three and a half feet high. The trees are now ready for *planting*, which may be done that autumn or the spring following.

PREPARATION FOR PLANTING ORCHARDS.

Plough and prepare the ground *well* as for any other field crop. Then strike out twenty feet each way; dig holes say sixteen inches square to a depth so as to plant the trees about two inches deeper than they stood in the nursery. The orchard now being planted should be cultivated with corn, for at least three years. The fifth hill in every fifth row of corn will be filled by a Peach tree.

The third year after planting, the tree will be in full bearing.

The above information was obtained from Mr. Reybold in person, who was so unwell at the time as not to be able to sit up. He was kind enough to call in his nurseryman, Mr. Samuel Lewis, to assist in detailing the above. Had I been as apt in taking down correctly as they were in giving the information sought, the paper might have been well worthy a place in "The Plough, Loom, and Anvil." I am unused to taking down statements of this kind, and have my fears of its answering the purpose you require.

Mr. Reybold had 30,000 trees budded with choice varieties last fall. His usual

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* Our friend is under a misapprehension. We too have noticed in New-York and Philadelphia the preference given to the open or free-stone peach, but south of that, and in our youthful days—we don't know how it is now—the preference was as universal for the *cling-stone* peach, for eating by itself. The open stone was preferred generally only for eating with milk. For ourselves, we have never met with any peach yet equal to the large October Heath Cling-stone Peach, white, with a blush on one side, which grew on an old peach tree in that same garden in old Calvert County.—*Ed. P., L., and A.*

quantity heretofore has been 20,000 each year. I did not learn the quantity of baskets sent to market the past season by the Reybold family, but as 1850 was considered a full average peach-bearing year, I presume they sent their usual share, which has been as high as 106,000 baskets.

Truly your friend, I. J. Jones.

DELAWARE FRUIT TREES.

The subscriber, at his Nursery, directly on the road from St. George's to Delaware City, has for sale a quantity of the *choicest descriptions* of Peach Trees, suitable for transplanting in the fall or spring, of the following varieties:

PEACH TREES.

PEACHES RIPEN AS NUMBERED.

1. Troth's Early Red.
2. Large Early York.
3. Yellow Rare Ripe.
5. Old Mexon—free.
6. Old Mexon—cling.
7. Red Rare Ripe.
9. Red Cheek Malagatoon.
4. Morris White.
8. Magnum Bonum.
10. Late Yellow.
11. Crawford's Late.
12. Ward's Late—free.
14. Cailaber's Pavie—cling.
17. Smock.
15. Delaware Late—free.
16. Patterson.
13. Late Heath—free.
18. Late Heath—cling.

APPLES.

SUMMER.

Large Early Bow.
Summer Pippin.
Summer Peer Main.
Summer Queen.
Red Kane.

AUTUMN.

Maiden Blush.
Rambo.
Cabbage Head.
Fall, Holland, or Golden Pippin.
Red Streak, or Haze Apple.

WINTER.

Bellflower.
Cumberland spice.
Roman Stem.
Winter Pear Main.
Turn-off Lane.
Lady Apple.
Paradise.
Falwalder.
Green Newtown Pippin.
Yellow Newtown Pippin.
Gilpin, or Cart House.
Grind Stone.
Rusticoat.
Gray House.
Smoke House.
Rhode Island Greening.
Red Baldwin.
Peck's Pleasant.
Black Gilliflower.
Roxbury Russet.
Winter Greexon.

Peach Trees are two years old from the seed, being but one year from the bud; are from five to seven feet in height.

Apple Trees are five and six years old from the seed, and from three to five years old from the graft.

The utmost confidence may be placed upon the Trees being of the kinds specified.

Philip Reybold, Jr.,
Near St. George's, Delaware.

November 14th, 1849.

To pound Red Pepper.—This sometimes bothers young housekeepers, and old ones too. The way they "fix" it in Virginia, is to tear or break up the pods; then mix them up with as much dough, made of corn-meal, as will give them proper consistence and cohesion, and then bake it as a hoe-cake, until it (the cake) is brown, and then beat it all together in your pepper mortar. It will then be strong and of a handsome color.

THE POTATO CROP AND ITS DISEASES.

INQUIRY BY THE FRENCH GOVERNMENT.

Worthy of all imitation is the practice of foreign governments to institute, through their agents abroad, inquiries into subjects that may enlighten the course, or increase the products of agriculture and horticulture.

Not only by the English Government, but by several on the Continent, important and effective measures are taken with that view, not merely by statistical inquiries, but by the establishment of institutions for the cultivation of sciences immediately bearing on that art which has been well called the mother and the nurse of all others.

The following inquiry, from the Commercial Representative of the French Government at Philadelphia, was promptly answered in the manner requested, and is here published, more with a view to acknowledge the want of light, and to solicit it, than in any pretension of being able to supply new and reliable information on a subject which, more than any other connected with vegetable physiology, has attracted the regard of scientific investigators.

It is proper to add, in this connection, that a free tender was made of this Journal, not only to the French and other foreign Governments, collecting data on agricultural subjects, but to all kindred journals and societies abroad, there being nothing more incumbent or agreeable than the free interchange of courtesies and of information, that may prove mutually advantageous.

Philadelphia, Jan. 31st, 1851.

Mr. John S. Skinner:

Sir:—I write to you to ask information upon a subject with which you are said to have more acquaintance than any other person in the country.

The French Government is desirous, on account of the comparative failure of the potato crop in France, to know the amount of the crop last year in the United States, the prospects of the ensuing year, and also in what localities and in what mode the best tubers are produced.

Not being able to subscribe to your paper, without previous permission from the French Government, which I have not yet obtained, will you be good enough to answer personally, and not, as is your usual custom, through its columns? I shall feel under great obligations to you by prompt attention to this.

I am, Sir, with respect,
Your most obedient servant,
M. de Vernon,
The French Consul.

Sir:—The decennial returns of the products of American Agriculture not being yet completed, it is not in my power to answer your inquiries as to the last year's product of *potatoes*, while it is yet too soon, were it indeed practicable at any time in a country so extended as ours, to pronounce as to the prospect for the ensuing season, the crop not being yet planted.

The fruitless-ness of all attempts hitherto by individuals, and even by commissions of able men, instituted by Governments in Europe, to throw any certain light on the potato rot, has prevented me from allowing it to engross, uselessly, much space in my Journal, deeming it more becoming at once to confess ignorance in a case of so much doubt and difficulty, and to wait for light. So far it may be said, that none of the various theories on this subject have been established to the general conviction. Some have referred it with confidence to *atmospheric influences*, others to the natural tendency of fruits and plants to *die out*, making it necessary to resort

occasionally to the seed for new varieties; but experience has contradicted all these assumptions. Thus in the last number of the *New-England Farmer*, the experienced editor says:—

"As to the cause of the potato rot, there have been many conjectures; and at first various secondary or predisposing causes, such as wet land, animal manures, warm wet weather, planting on old lands, &c., &c., were by different observers regarded as the principal cause, and those remedies which had a partial effect, and in some cases seemed sufficient, were at once regarded as completely effectual. Again, some varieties that were more hardy than usual, appeared from limited experience to be proof against the disease. But as it continued, and occasionally increased in violence, in some sections it swept away all theories.

"On every soil and location the potato has been affected; no manure, or mode of manuring, or the absence of manure, has saved it from destruction when the disease has been severe. No variety has escaped the ravages of this disease. Even new varieties, which some thought might be relied on, have rotted as readily as old ones. We have raised new varieties from the seed that have rotted the first year, and last year we lost more than fifty varieties that were two and three years from seed, as they all rotted. Since this disease has prevailed, we have had some seasons that were rather dry and tolerably cool, without one severe rain during the period of the potato rot, and yet the rot has prevailed.

"It was supposed that the potato was declining generally, and that it might be renewed in full vigor by procuring seed and tubers from the native region of the potato. This has been tried without any favorable result. Potatoes from seed brought from Peru rotted as readily as old varieties planted by the side of them. When the disease was spreading nearly over the whole world, and the only places heard from where it did not decay were the South of Spain and some Islands of the Mediterranean, potatoes were procured from those favored spots, and planted in England, but they failed also.

"Although early planting is generally attended with the best success, yet no time of planting has been a security. We have known early potatoes to rot in June, and the disease to prevail occasionally from that time till the latter part of November. We have known it to appear early and then disappear for one or two months. One year, (1847,) we dug the most of our potatoes by the 20th of September, and they had rotted but very little, some varieties not any. We then omitted digging till the 10th of October, and in some cases they were half rotten by the side of those that had not rotted any at the previous digging.

"The state of the weather is not the principal cause of the rot, for in years past we had as wet and as warm weather as we have ever had since the rot prevailed; yet the wet, warm, muggy weather is the most powerful of all secondary or predisposing causes—so powerful, that when the weather is dry and cool, the potato will generally resist not only the principal, but all other secondary causes. As an example, in 1849, a season in which the disease was very light, generally, we had procured a hardy and valuable kind, and to subject it to a severe test, we planted some on wet land, and manured with unfermented animal manure. On digging them the last of September, they had not rotted. But as we had no rain of consequence for some weeks, we let a part of them remain, till after rather heavy rains in October, and yet they had not rotted. This variety seemed so hardy, that we planted more of them than any other variety last season, and the crop was not worth digging, not even on dry land."

The most certain preventive, that at least to which I should resort with most confidence, is one which has been brought to my notice in the course of editorial correspondence, and is probably not generally known. It was published by me in the *Journal of Agriculture*, in May, 1848, and experiments were made again the last season, fully confirmatory of the result then communicated.

The experiment consisted in planting the sets, from three to four inches deep, in drills about eighteen inches apart, and *covering the drills with well-cleaned straw*, about three or four inches thick, except a small portion of them that was left uncovered by way of trial. The potatoes in the portion of the field covered with straw were found, on being harvested, to be in full quantity, and entirely *exempt from disease*, while those *in the portion left uncovered were diseased.*

The trial has been made again the past season with the same result; and Mr. Naill, a very judicious Agriculturist, and a Member of the Senate of Maryland, has determined to persevere in the same management, with confidence in its efficacy. The covering shades the plant, protects it from the effects of drought, and saves all expense of after culture.

Colonel M. P. Wilder, the President of the Norfolk County Agricultural Society of Massachusetts, and among the most enlightened horticulturists of the day, has recently expressed, as to cause and remedy, his full faith in the opinion of Mr. Teschemacher, (distinguished for his botanical and chemical knowledge,) who is convinced by microscopic observations, and was the first to proclaim the opinion, that the cause of this disease is a *fungus* propagated by clouds of invisible spores (seeds) which settle in some places and not in others, just "as the wind listeth or bloweth," and that whenever they come, where they light or settle down *in contact with salt*, they cannot vegetate. This last suggestion accords with the experience of my friend R. L. Colt, of Roswell House, New-Jersey, who says he has found the disease to be much aggravated by the use of barn-yard manure, and that where he employed eight or ten bushels of Turk's Island salt, his potatoes were of fine quality, free from disease. It may be that the straw on which the spores of the fungus alighted proved to be a non-conductor, or bed unsuited to their propagation. Be that as it may, I can vouch for the intelligence, and for the observant and cautious habits of my correspondent, Mr. Naill, and the confidence which may be placed in his statement of any facts related as falling under his personal notice.

The trial is very easily made, and will well pay for the trouble in the economy of labor it proposes, to wit: dispensing with all after culture.

The phenomena connected with the physiology of this plant, and especially as to the cause of this malady, have undergone much more scientific investigations in Europe than in this country. But it may have happened in the case above, as sometimes does happen, that accident has revealed what science had failed to discover.

Very respectfully,
Your obedient servant,
John S. Skinner.

To M. de Vernon, Esq.,
French Consul at Philadelphia.

THE PRESIDENT'S MESSAGE:

NOTICE OF AND EXTRACT FROM, IN THE LONDON MARK LANE EXPRESS.

The following extract from the American President's Message merits particular attention:—

"CONTEMPLATED TARIFF.

"All experience has demonstrated the wisdom and policy of raising a large portion of revenue for the support of government from duties on goods imported. The power to lay these duties is unquestionable; and its chief object of course is to replenish the treasury. But if, in doing this, an accidental advantage may be gained by encouraging the industry of our own citizens, it is our duty to avail ourselves of that advantage.

"A duty laid upon an article which cannot be produced in this country—such as tea or coffee—adds to the cost of the article; and is chiefly or wholly paid by the consumer. But a duty laid upon an article which may be produced here stimulates the skill and industry of our own country to produce the same article, which is brought into the market in competition with the foreign article; and the importer is thus compelled to reduce his price to that at which the domestic article can be sold, thereby throwing a part of the duty upon the producer of the foreign article."

"The continuance of this process creates the skill, and invites the capital, which finally enables us to produce the articles much cheaper than it could have been procured from abroad, thereby benefiting both the producer and the consumer at home. The consequence of this is, that the artisan and the agriculturist are brought together; each affords a ready market for the produce of the other; the whole country becomes prosperous, and the ability to produce every necessary of life renders us independent in war as well as in peace.

"A high tariff can never be permanent. It will cause dissatisfaction, and will be changed. It excludes competition, and thereby invites the investment of capital in manufactures to such excess that when changed it brings distress, bankruptcy, and ruin upon all who have been misled by its faithless protection. What the manu-

facturer wants is uniformity and permanency, that he may feel a confidence that he is not to be ruined by sudden changes.

"But to make a tariff uniform and permanent, it is not only necessary that the law should not be altered, but that the duty should not fluctuate. To effect this, all duties should be *specific, wherever the nature of the article is such as to admit of it.* Ad valorem duties fluctuate with the price, and offer strong temptations to fraud and perjury. Specific duties, on the contrary, are equal and uniform in all ports, and at all times, and offer a strong inducement to the importer to bring the best article, as he pays no more duty upon that than upon one of inferior quality.

"I therefore strongly recommend a modification of the present tariff, which has prostrated some of our most important and necessary manufactures, and that specific duties be imposed sufficient to raise the requisite revenue, making such discrimination in favor of the industrial pursuits of our own country as to encourage home production, without excluding foreign competition. It is also important that an unfortunate provision in the present tariff, which imposes a much higher duty upon the raw material that enters into our manufactures than upon the manufactured article, should be remedied.

"As before stated, specific duties would, in my opinion, afford the most perfect remedy for this evil: but if you should not concur in this view, then, as a partial remedy, I beg leave respectfully to recommend that, instead of taking the invoice of the article abroad as a means of determining its value here, the correctness of which invoice it is in many cases impossible to verify, the law be so changed as to require a home valuation or appraisal, to be regulated in such manner as to give, as far as practicable, uniformity in several ports."

HONOR TO THE PLOUGH.

For this we must, it seems, look to any other Government before the one which boasts of being a *popular* Government—a Model Republic.

We learn from the following communication, which appears in *L'Echo Agricole* a French agricultural journal that services valuable to agriculture, are in France regarded as deserving of honorable distinction equally with the professions, the sciences, or the arts.

By a decree issued by the President of the Republic, at the suggestion of the Minister of Agriculture and Commerce, dated the 10th of December, 1850, the following persons have had the order of the Legion of Honor conferred upon them:—

M. M. Dawzat, a Member of the General Council of the High Pyrenees during a period of sixteen years, in consideration of services rendered to agriculture.

Darblay, Jr., Member of the Council of the Department of Corbeil, for the remarkable impulse he has given to the grain trade, and to the manufacture of flour.

Gareau, as a reward for the remarkable progress he has caused to to be made in the art of drainage, and the zeal he has shown in extending the practice of it in France.

Graux, of Mauchamp, farmer, for services rendered in sheep-breeding, by improving the fine-woolled Merinos sheep of Mauchamp.

Lemarié, of Toufreville, for his useful agricultural works, and the remarkable improvement which he has caused to be made in the breeding of cattle.

W. Lecocq, a landed proprietor of Clermond Ferrand.

Perrin, of Bénévent, President of the Association of Vaugneray, for having materially contributed to the advancement of agriculture in the Department of the Rhone.

"We cannot but applaud the act of justice," says *L'Echo Agricole*, "by which the Government has just admitted into the ranks of the Legion of Honor a certain number of eminent men who have rendered services to their country as agriculturists and as commercial men. There is not one of those whose names we have just given, who does not merit in the highest degree the reward awarded to them. We should not have particularized any one, if the appointment of M. Darblay, Jr., and the motives on which the *Moniteur* relies, did not appear to us sufficient to call for a

particular observation. Already a certain number of farmers have received the decoration of the Legion of Honor, but up to the present time we have not seen it conferred for services rendered as a corn-merchant and flour manufacturer. Decorations have been lavished upon almost every species of manufacture and commerce—cloth, calicoes, silks, &c.; but the trade and manufacture which affect in the highest degree the grower and consumer of agricultural produce, have been buried in oblivion. This omission, it must be admitted, was an injustice founded upon prejudice. The high reward given to M. Darblay is a beginning of reparation; it will be an encouragement to all those who, far or wide, follow M. Darblay in the career he has run, and which he still runs with so much honor and ability. It is at the same time an indication that the prejudice against the grain and flour trade is disappearing in the administrative department: it is by such acts that a salutary influence is produced on public opinion, and that fatal errors are dispersed. The reward, regarded in this point of view, is alike honorable to the citizen who has received it, and to the minister by whose recommendation it has been given (At Pommier)."

☞ The reader will observe that we have given several articles on culinary vegetables, such as it may be that some are not in the way of cultivating. But then it is to be remembered that this Journal is patronized, not only by Planters and Farmers, cultivating great staples on a large scale, but by many Market Gardeners, and by gentlemen in cities, who have their gardens in the neighborhood.

The pamphlet from which these articles are taken was imported expressly under the assurance of its being the recent experience of a man distinguished for his practical knowledge and success; and though it may contain much that is adapted only to what is called *high culture* in Horticulture, it contains also much that many might practise with profit, who pay too little attention to such things. There are several such articles yet in reserve, which, bearing in mind the season at hand, would have been given if we had received it in time.

☞ We have a collection of facts in answer to an inquiry about the cultivation of the sun-flower, with a view to the extraction of oil from its seed, but we are obliged to postpone many things that we would like to insert—and among them an article from a venerable and respected friend, in contradiction to the declaration from the Department of the Interior as to the generally perishable nature of *sand-stone* for public buildings. In the meantime, we doubt much if the sun-flower can be profitably cultivated with the views specified.

☞ Some very remarkable observations have been made by Doctor W. M. Fahnestock, on a case of wheat germinating when encased in ice, and which grew on being planted out. We shall register, in order to preserve the facts, as soon as we can. They appear to be at war with all theory and experience on the laws of vegetable germination, which has been supposed to demand, indispensably, not only air and a certain degree of moisture, but also of *heat*.

☞ The new insect enemy to the growing wheat, sent by a friend from Edenton, N. C., has been referred to a lady, proficient in the history of insects, whose answer we will publish in our next. She says it belongs to the order of *aphidæ* or plant lice. The same insect and its ravages have been observed in Kent county, Maryland.

☞ The denial of the necessity and value of protection to American labor is a hollow pretence; if not, why do all parties unite in what those who enacted it call the *protective* tariff of 1846? The fact is, the principle is yielded. It can no longer be denied. The question is one, therefore, not of principle, but of *amount*, and of guarantee for its enforcement against fraud and perjury. What excuse can there be for refusing to provide against these?

Editor's Table.

"THE WORK GOES BRAVELY ON."

———, *February* 16, 1851.

My Dear Sir:—I was much pleased with the suggestion of Governor Trimble, of Ohio, who volunteered to join one hundred or one thousand, to make up five each; and in default to take that number of the *Plough, the Loom, and the Anvil* himself. This project, if carried out, will be some compensation for the labors of the veteran Editor in the cause of Agriculture: one who has toiled for us just about one third of a century. The writer of this article recollects well of reading the first number of the old *American Farmer*, bearing date 2d April, 1819, and also the last number of the PLOUGH, THE LOOM, AND THE ANVIL, bearing date February, 1851, and can bear testimony that the Editor has never faltered in the good work of giving us the requisite information as to how to produce the best *crops*, *finest stock*, the most *thrifty towns*, and most *prosperous population*, at the least possible cost; and also how *to obtain the best market* for the products of all our labors: all of which he has demonstrated to be easily attained, by simply placing the *Loom and the Anvil near by the side of our Ploughs.* So easily, indeed, that I am only astonished that every farmer and business man in the whole country has not come out, as one man, to sustain him in his patriotic and zealous efforts by *all* sending in their names and amount of subscription to the *Plough, the Loom, and the Anvil.*

This being my view of the value of his untiring efforts, for more than thirty years, I propose to get a *few thousand*, instead of two hundred clubs, of five subscribers each, by myself standing sponsor (as Governor Trimble recommends) for a club of five each for *each of the counties* in the State of Delaware. I do hereby order that five packages each for every county of this State, of the present or third volume of the *Plough, the Loom, and the Anvil*, may be set apart for that purpose; and I will be up in the course of a month with the names and addresses of the new and additional batch of subscribers, together with the amount of subscription at two dollars each. I want the back numbers of the present volume, which contain those valuable papers, the *Harmony of Interests*, by H. C. Carey, of Burlington, N. J., and which ought to be read, if possible, by *every American citizen.* It is time the whole people should rally to American Interests, and abandon the bauble of Free Trade; to an extent, at least, of sending subscribers equal to at least five from each county in all the States and Territories in the Union.

Respectfully and truly yours, J. J.

To J. S. SKINNER, Esq., Ed. Plough, Loom, and Anvil.

P. S. If my project were carried out to the extent desired by me, throughout the Union, your profits in the matter would not net you a tithe of the amount that Richard Cobden or some other writer on Free Trade obtained in England, in ready cash—three hundred and fifty thousand dollars, was it not?

☞ About 40 of the two hundred taking 5 copies each for gratuitious distribution, or for *sub*-subscribers, have already sent in their names and contributions. The completion of that company will put the editor once more in a comfortable fix; and even 5 to a State would do it. He gives to the industrial classes all his time and faculties with good will, and only laments that he is not in a situation to do it gratuitiously.—*Ed. P., L., and A.*

WOOL AND MUTTON.

BLUE POND FARM, Wheatland, N. Y., Jan. 30, 1851.

Dear Sir:—I now inclose $5 for vol. III. and IV. May you be blessed to hold on your way for many a long year. You cannot extol the sheep too high. We must become a wool-growing and mutton-eating nation. I have a flock of Merinoes of three hundred, which have given me a return of over $3 per head in wool and increase the past year. The average fleece was 4 lbs. 13 oz. per head.

J. S. SKINNER, ESQ. Yours truly, RAWSON HARMON.

The Plough, the Loom, and the Anvil.

Vol. III. APRIL, 1851. No. X.

THE PROSPECT:

AGRICULTURAL, MANUFACTURING, COMMERCIAL, AND FINANCIAL,

AT THE OPENING OF THE YEAR 1851.

BY HENRY C. CAREY.

Having closed in the December number Mr. Carey's essays on the "Harmony of Interests, Agricultural, Manufacturing, and Commercial," in which it was made apparent, by facts and arguments past all dispute, how all these interests prosper together under a system of protection, and how as invariably they have declined when that system has been withdrawn,—the January number was opened with "The Prospect, Agricultural, Manufacturing, Commercial, and Financial, at the opening of the year 1851." This lucid exposition of the condition of the country commenced with an earnest but respectful invitation to the Hon. R. J. Walker, author of the Tariff of 1846, and Head of the Free-trade League, to a fair and full discussion of the two systems,—Mr. Carey, himself an advocate for Free-trade, maintaining that it is only to be reached through a system of perfect protection. For ourselves, our only object being to arrive *at the truth*, we engaged to publish both sides, if the opponents of the doctrine we maintain would so far reciprocate as to do the same in any recognised journal of "The League."

Though this challenge to a fair discussion, in which the whole public is so deeply interested, was copied and spread throughout the Union, to this day Mr. Walker has never taken up the glove. *There it still lies.*

Whatever estimate may be placed upon these papers from Mr. C. by men who have not yet acquired the habit of thinking, or who think that the *Alpha* and *Omega* of government and liberty consist in *party* ascendency, they have not failed to command the notice and admiration of some of the ablest writers on political economy in Europe. Thus, among others to the same effect, the London *Standard* says, "It is one of the ablest documents it has been our fortune to meet with on the question of protection and free-trade. Were the question brought before the British Legislature in the same able manner, in all the practical details, as by Mr. Carey, the author of the publication alluded to, (a letter addressed to the ex-Secretary free-trade Walker, last month,) it would, we humbly conceive, smash our free-traders *in toto*, and convince ignorance the most obstinate, and prejudice the most blind."

But our purpose now is to announce, that the present series of essays, intended to warn the public of the frightful prospect opening upon the country, will be closed in our next number, in which the reader will find the "*Promise*" of 1846 contrasted with the "*Performance*." After that, shorter papers will be given to illustrate the connection between the financial policy of the government and our agricultural and other great industrial interests to be as natural and inseparable as are cause and effect throughout nature. [*Ed. of P. L. & A.*

When production is large and prices are fair, the labourer obtains good wages, and is enabled to supply himself abundantly with food and clothing, and ultimately to become the owner of machinery to be used in aid of his labour, while the farmer finds his land increase in value; and then it is that all grow rich. That such is the case, is proved by the rapid increase in the consumption of cotton and woollen cloths, and of iron, under the tariff of 1842.

When, on the contrary, production is small and prices are temporarily high, the labourer obtains less wages, and finds a diminution in the power to purchase food or clothing, and his power to accumulate is destroyed, while the farmer finds his lands diminishing in value; and thus it is that all grow poor. That such is the case, is proved by the diminution in the consumption of cotton and woollen cloths, of fuel and of iron, under the tariff of 1846.

With a population two-thirds greater than in 1833–4, we export a less

actual quantity of tobacco and rice—little more per head of provisions—and but about sixty per cent. more of cotton, and the quantity falls from day to day. Such is the case with almost every article of domestic production, and of every one we produce far less per head than we did four years since. The new crop of mess pork is now selling in New York at $14, and mess beef at $15, being an advance of from forty to fifty per cent. upon the above prices, a consequence of diminished production. The labourer suffers in the price of his food, and the ship-owner suffers in the diminished demand for ships.

Maine sent to market, in 1842, of LUMBER..... 111,000,000 feet.
The quantity grew gradually until it reached, in 1845,... 171,000,000
And the average of 1845 and 1846 was..... 156,000,000
For a time it continued to grow, but in 1849 it receded to 160,000,000
In the present year the amount shipped has been about ... 180,000,000

We have had a vast increase of population, and yet the increase is trivial.

If the reader desire to understand the cause of this, he will find it in the following statement of the import from Canada:

Lake Champlain received of sawed lumber from the port of St. Johns:

	Board Measure.
In 1847	7,000,000
In 1848	9,000,000
In 1849	12,000,000
In 1850, to Oct. 10	41,785,741

And of square timber:

	Cubic Feet.
In 1847	310,000
In 1848	730,000
In 1849	1,150,000
In 1850, up to Oct. 10	2,660,000

In 1850 the total lumber exports to Lake Champlain up to Oct. 10th, amount to the large sum of 61,705,941 feet broad measure.—*Burlington Courier.*

The closing of the mines and furnaces and factories has diminished the market for lumber, and Maine is now being depopulated by the emigration of her men to Minnesota, there to engage in the preparation of new machines *for future production*, while, in the mean time, we have to bring the food of Canada to feed the men engaged in making roads by which they may come to market, and the lumber of Canada to make the sills for those roads, and build the houses of the workmen employed in laying them.

In 1846 the quantity of SALT reaching tide water, Buffalo, and Oswego, amounted to..... 2,788,489 bushels.
By 1849 it had reached..... 3,661,926

In 1850 there has been a diminution of production to the extent, as is stated, of a million of bushels, bringing the quantity down to, or probably below, the point at which it stood in 1846.

Every thing with which to pay for cloth or iron, is scarce, and hence the "glut" of cloth and iron. The productive power of the nation diminishes daily, and we are held to be highly "prosperous" because prices rise, *and the less the power to produce commodities to be transported, the greater is the excitement in relation to constructing new roads by which this diminished product may be carried to market, and new lines of steamers by which the short and steadily diminishing crops of food, cotton, and tobacco may reach the great market of Europe.* The more roads we build, the fewer commodities we produce; and the smaller our power of consumption, and our power to maintain trade, the greater is held to be the necessity for new machinery of trade. The road by Tehuantepec, as we are told, grows in favour from day to day. Again, we learn that the Nicaragua Canal is the favourite; while, at the next instant, we have the claims of Mr. Whitney's great road pressed upon us for consideration. Mobile must have its road to the Lakes, one sec-

tion of which is to be six hundred and fifty miles in length.* Charleston seeks a road to Memphis, and St. Louis is determined on one to the *Rio Grande.*

Canada knocks at our door for permission to introduce her food and her wool duty free, that she may be enabled to go abroad to purchase cloth to clothe the men who grade her roads, and iron with which to lay them. Emigration to that country diminishes daily. It is less this year, by twenty per cent., than it was the last. Her lands are diminishing in value, for she has no domestic market, and she finds herself compelled to look to us for an outlet for her products. She sees that the greatest market of the world for food, is ours; and yet, but recently, we were told that we had four hundred millions of bushels for which we needed a market! Canada pays twenty per cent. duty, and competes with our farmers now. Admit her products duty free, and she will then speedily double and treble her quantity,† for her land will then acquire value as ours loses it, and we shall then be contributing largely towards the making of her roads. That will be one more and a great step on the road to ruin we are now so rapidly travelling.‡ We shall then have a system of *machine-making* such as the world never before witnessed. With Canada and her

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* Some of the leading railroad men and capitalists of this city, in connexion with others of Boston and Philadelphia, will apply to the Legislature of the State of Illinois, at its next session in January, for a charter, under the name of the "Great North Western Railroad Company," for the purpose of constructing the proposed Railroad from Cairo, at the mouth of the Ohio river, to the southern terminus of the Illinois and Michigan Canal, with branches extending to Galena and Dubuque, and to Chicago, embracing in all upwards of six hundred and fifty miles in length. In aid of this road it will be recollected that Congress, at its last session, granted some two and a half millions acres of land lying on its route. The provisions of the proposed charter are stated to be very favourable for the State, while, at the same time, it offers inducements which insure the requisite amount of capital to complete the road in the shortest possible time, and without the necessity of disposing of an acre of the donated land, until after the road is open for use its whole length.—*Public Ledger.*

† The quantity of wheat for which Canada needs a market this year, is estimated at *eleven millions of bushels.*

‡ "*Spite the twenty per cent. duty, it is highly probable that, owing to the completion of the Ogdensburg and Lake Champlain Railroad, an increasing quantity of Canadian produce will be consumed in the manufacturing towns of the New England States.* It invariably happens that the stocks of breadstuffs in the importing States are pretty thoroughly exhausted prior to the opening of the navigation each year. At such times Canadian flour will be more readily accessible by the Ogdensburg railroad than the produce of the West. *The reciprocity question acquires additional importance from these circumstances, pointing, as they do, to the probability that the New England States will become our best market, the consumers of the bulk of our surplus produce.* The causes that have hitherto retarded the transport of western produce to the seaboard during the winter, will be partially overcome by the completion of the Erie railroad, west of Buffalo, on the south side of Lake Erie. With the completion of that section, a line of railroad will extend from the wheat giving States of the West to New York. When brought to the latter place, the produce will still have to be conveyed to the Eastern States for consumption. *The proximity of the wheat-giving districts of Canada to the Eastern States will enable us to supply their market more readily than it will be in the power of Western growers to do.* The United States, considered as a unit, are exporters of agricultural produce. The Union is, however, divided, commercially, into two sections—the agricultural, grain-exporting States of the West, and the manufacturing, grain-importing New England States. Canada is a competitor, but not on equal terms, for supplying the wants of the importing States.

"*The difficulty is to overstride the barrier of twenty per cent. duty.* Whether this be overcome or not, to any great extent, Boston will probably become the shipping port for most of our produce. The reciprocity question has acquired a ten-fold importance from the facilities which the Ogdensburg railroad offers for conveying our produce to the markets of New England. Congress has adjourned, leaving the question where it has been for years. *We must wait patiently to* SEE WHAT THE NEXT SESSION WILL BRING FORTH."—*Canada Paper.*

roads on the north, Nova Scotia and her roads on the north-east, Nicaragua and Mexico on the south, California, Utah, and New Mexico and their roads on the south-west, and the almost innumerable roads, rivers, and harbours of the centre, with a *daily diminishing power to produce* the lumber with which to build their houses and lay the roads—the food with which to feed the men who make the roads and clear the farms—or the cloth with which to clothe them—and a daily increasing necessity for purchasing food, clothing, lumber, and iron, with corresponding dimunition in the power to pay for them, we shall then be more fairly started in the career which leads to ruin than we were in 1836, and probably about equally so with England in 1846.*

Diminished demand for labour has greatly diminished wages. Of the tens of thousands who have been dismissed from the now abandoned mines, and furnaces, and mills, a large portion now earn nothing whatever with which even to purchase food, and yet provisions have risen in price because of diminished production, and cotton and tobacco have risen in price from the self-same and only cause, for *the power of purchase* diminishes from day to day. The necessary consequence of the diminished reward of labour is, that immigration has become stationary, and must diminish as the necessaries of life rise in price with the increase of *machine-making* and diminution of production. From 1843 to 1847 it grew steadily, commencing with 75,000 and ending with 239,742. Since then, the following has been the movement:

1848	229,492
1849	299,610
1850	269,718

Every arrival brings with it the advice that "passengers are comparatively scarce and considerably lower," and thus, as our power to produce commodities for export diminishes, there is a diminution, and that necessarily, of the inducement to foreigners to come and live among us, and make a market for our products.

In the four years of the tariff of 1846, immigration trebled, and we not only fed and clothed this large increase, but our power to supply food and cotton to the world increased with unexampled rapidity, and the power of the labourer, the mechanic, the farmer, and the planter, to command cloth and iron increased with such rapidity that the consumption of cotton, per head, doubled, and that of iron trebled, in that brief period.

From that time to the present, the power to obtain food, and cloth, and iron, in return for labour, has greatly diminished, as is obvious from the fact that the price of food has greatly risen, because of diminished production, and the consumption of cotton, of wool, and of iron, has *actually diminished in quantity*, nothwithstanding the vast increase of population. Immigration has become stationary, not because of a diminished desire to fly from Europe, but because the demand for labour has diminished, as mines and furnaces and mills have been closed, and as capital has ceased to be in demand for the opening of new mines and the building of new furnaces and mills. The tariff of 1846 was to diminish taxation and raise the price of labour. Had it done so, the ratio of the growth of immigration would have

* As this page is going to the printer, I meet with the following passage, to which I beg to call the attention of the reader:—

"The beginning of the year 1836 was characterized by every symptom of *prosperity*, and its usual accompaniments, great speculation!"—*History of English Panics, in Merchant's Magazine.*

Had any one in 1836, or in 1846, predicted the ruin that was to come on England, he would have been laughed at, as I may be by many of my readers. To such, I have only to say that, if they will re-read these pages a few years hence, they will understand them better.

increased from year to year. From 1844 to 1845, the growth was about *thirty-five* per cent. In the next year it was *forty-five*, and in the following one it was *seventy*. Why has not this ratio been maintained? Why has it not even *increased*. The answer may be found in the fact that the productiveness of labour has diminished, and that it is in a steady course of diminution. To those who would desire to seek in any other cause a reason for the change, I have to say that the reasons for *emigration* from Europe have greatly increased within the last three years,* and that, if we had not destroyed among ourselves the reasons for *immigration*, the number of persons arriving here this year would be little short of a million, making a market for a greater quantity of agricultural produce than we shall this year export to all the world.

The power to import commodities from abroad depends upon the power to produce commodities to give in exchange for them, or upon *the credit* of the nation that desires to obtain them without immediate payment. Under the tariff of 1828, our power to purchase, *and pay*, grew with great rapidity, and we made great credit abroad. Under the compromise act our power to pay diminished with great rapidity, and we used our credit until we became bankrupt. Under the tariff of 1842, our power to purchase, *and pay*, increased with immense rapidity, because our productive power increased. We then redeemed our credit, for we not only paid up all the back interest, but paid off much of the debt that had accumulated. Our power of production is now diminishing rapidly, and we are now again using our credit, as we did in 1836, and speedily to arrive at the same result. In the last three years the foreign debt of the country has grown from about *two hundred* to nearly *three hundred* millions of dollars, and the annual interest from *twelve* to nearly *eighteen* millions of dollars, requiring for its payment, probably, almost all the food we shall export this year.

The following table will enable the reader to compare *the growth* of our power to consume foreign products under the tariff of 1842, when we not only *paid for all we imported*, but paid off many millions of back interest, and of debt, with the growth of that power under the tariff of 1846, when we go in debt, at a rate increasing with every hour, until it has at length reached the appalling amount of almost a million of dollars per week.

	Salt. Bushels.	Sugar. Pounds.	Coffee. Pounds.	Tea. Pounds.	Pig Copper. Value.	Coal. Tons.
1841–2 1842–3 average,	5,800,000	115,000,000	107,000,000	13,000,000	$595,000	98,000
1845–6 1846–7 average,	8,100,000	166,000,000	138,000,000	15,500,000	1,375,000	152,000
1847–8	8,969,000	244,000,000	145,000,000	21,000,000	702,000	196,000
1848–9	11,622,000	242,000,000	151,000,000	13,000,000	988,000	200,000
1849–50	11,224,185	204,000,000	130,000,000	25,000,000†	1,167,000	180,000

* The following is a specimen of the course of things in Ireland:—

"Evictions.—During the last two years and a half, the houses of 1951 families have been levelled in Kilrush, Ireland, and 408 other families have been unhoused."

In Germany and in England the reasons for emigration increase hourly, and yet, as we are here told, large numbers of emigrants are returning to Ireland because of inability to get employment.

"Emigration Turning Back.—The *Kilkenny* (Ireland) *Moderator*, of October 2d, states that a considerable number of persons, who recently emigrated to America, returned home last week, being disappointed in their expectations of earning a livelihood in the New World."

† The *value* of Teas imported in 1845 and 1846, was.....$10,752,000
whereas, that of the importations of the two last years has been only.... 8,659,000

	Iron. Tons.	Cottons. Value.	Woollens. Value.	Flaxen Goods. Value.	Silks and other French Merchandise.
1841–2 1842–3 average,	81,050	$7,184,000	$6,300,000	$2,900,000	$14,500,000
1845–6 1846–7 average,	89,300	14,780,000	10,300,000	5,063,000	23,250,000
1847–8	175,000	18,412,000	15,230,000	6,600,000	28,000,000
1848–9	312,000	15,180,000	13,704,000	5,700,000	23,233,000
1849–50	352,000	19,895,000	15,965,000	8,095,000	27,000,000

We have thus, for the last year, a little more salt, sugar, and coal, and some tea to take the place of the coffee that is short—a small increase of silks and other French merchandise, and about one-tenth as much additional cottons, woollens, and flaxen goods, as could be spun and woven by the operatives who are now unemployed, and one-half as much additional iron as could be made in the now abandoned furnaces by the now unemployed workmen—and withal, *we have gone fifty millions in debt.*

It is impossible to examine this table without being struck with the utter insignificance of any *possible* augmentation of the foreign trade, compared with that which, under a system which looks to the establishment of free-trade by means of breaking down the British monopoly of machinery, takes place in the domestic market. Under the tariff of 1842, the production of iron grew from 200,000 to 800,000 tons, with a demand increasing more rapidly from year to year. We have now reduced the domestic production to less than 500,000 tons, and our increased import amounts to 270,000 tons, *and unpaid for.* Under the tariff of 1842, the domestic consumption of cotton grew from 267,000 bales to 600,000. Under that of 1846, we have reduced it so far that that of the present crop cannot exceed, and may not equal 500,000, and our increased net import, that is to say, the excess of import, deducting the excess of export, does not exceed *ten thousand* bales—and for this we have not paid. Under the tariff of 1842, the import of cottons doubled, while with a greater increase of population, and all the vast increase of debt, it has exceeded that of 1846 by less than fifty per cent. Under the tariff of 1842, the domestic consumption of wool doubled, while under that of 1846 it has largely diminished, and yet the import of woollens, which increased sixty per cent. under the former, has grown only fifty per cent. under the latter, and for that we have yet to pay. Under the tariff of 1842, the import of flaxen goods almost doubled. Under that of 1846, it has grown only sixty per cent. That of pig-copper more than doubled under the one, while it has largely diminished under the other. Silks and wines grew more than fifty per cent. under the one, and were paid for. Under the other they have grown fifteen per cent., and are not paid for. Coal grew under the one from one million to three, and imports grew more than fifty per cent. Under the other, production has remained stationary, while imports have grown but 28,000 tons. The power of consumption diminishes with the diminution of the power of production.

The great object of what is called "free-trade," is to increase our trade with Europe, by sending there our raw materials, instead of working them up at home, to be sent, in the forms fitting them for use, to the producers of tea, coffee, salt, copper, and other raw products, and yet it is impossible not to be struck with the utter insignificance of the commodities received in exchange The whole energies of the country are directed to this foreign trade. A large portion of its territory and of its population is employed in producing cotton, rice, tobacco, flour, pork, cheese, &c. &c. for Europe, and for the maintenance of this trade we build immense cities, and fleets of ships and steamers, and

support expensive embassies, with most of which we could better dispense, and what does it amount to? All the iron we receive from them does not amount to fifty cents per head. All the wool scarcely exceeds half a pound per head. The flaxen goods would scarcely give to each person a shirt, and the silks would do little more than give to each a handkerchief. Of all the cotton we send abroad the quantity returned is trivial. Of the products of the earth we receive from Europe scarcely any thing, and what we do receive from thence consists mainly of *the services* of men, women and children employed in spinning and weaving cotton, wool, flax, and silk, under hard task-masters—*middlemen*, who live at the cost of the producer and consumer—and thus it is that we contribute to the maintenance of a system that is destroying the people of Great Britain and those of all her colonies. It may safely be asserted that there exists no record of any independent nation submitting to be compelled to aid in maintaining a system at once so ruinous to themselves, and so immoral, for we are fairly chargeable with furnishing the means by aid of which that country is enabled to tyrannize over Ireland, India, China, and the other nations of the earth. Without our aid she would be powerless for the maintenance of a system that can be designated by no other term than that of "satanic," and yet it is in the name of "democracy" that we are invited to aid in the continuance of a course of oppression unequalled now, or at any other period of the world.

It is clear that we produce less to send abroad. We have less cotton for export, because we produce much less in quantity than we did four years since. We have less tobacco to export, and less rice, and the prospect is, that when we shall have gotten fairly started in our career of road-making we shall have no food whatever to spare, but, on the contrary, shall have to increase our imports from Canada. Our export trade diminishes and freights are low.

Our import of men is now diminishing, and each successive arrival brings intelligence of the increased difficulty of filling ships, at lower rates, and this difficulty must continue to increase, as the price of food shall rise with diminished production, attended, of course, as it has been and must continue to be, with an actual diminution of money wages. We obtain less oil. We have less freight outward, and less freight inward, and the earnings of our shipping employed in the foreign trade have largely diminished,* the necessary consequence of which is a diminution of ship building.

In the year ending June, 1843, we built	64,000 tons.
In that ending June, 1847, it reached	243,000
In the year 1847–8, it was	318,000
For 1849–50 it has fallen to	272,000

We see here the quantity trebling under a system that was to destroy foreign commerce, and stationary under one that was intended to foster it at the expense of domestic production, upon which commerce must be built. How far this is the case, will be seen from the following most instructive facts in relation to the building of vessels for the canal and coasting trades:

	Brigs.	Schooners.	Canal Boats.	Steamers.
Built in 1842–3	34	118	173	79
1845–6	164	576	355	225
1849–50	117	547	290	159

* A barrel of flour is carried to Liverpool for a shilling, 24 cents, and three pounds of cotton go for a cent. An eminent merchant recently told me that he would not *accept* a packet-ship on condition of running her in the New Orleans or Liverpool trade. The ships now being built are remarkable for speed, and they make good freights, while the common run of ships are far more likely to ruin their owners than to enrich them.

With a vast increase of population the internal trade diminishes under a system that looks to building up a large foreign commerce upon the ruins of a domestic one. The system of 1846 looks to the erection of *an inverted pyramid*. That of 1842 looked to the erection of *a true pyramid*, giving us a large external commerce based upon an immense internal one.

There has been an increase in the number of ships, while the canal boats and steamers, which bring food for foreign trade, have diminished. That, however, is not all. The quantity of shipping absorbed by the gold discovery in California, unthought of at the time that the tariff of 1846 was passed, is greater than the whole amount built in the last two years, so that, notwithstanding our vast increase of population, *the quantity employed in our foreign trade is greatly less than it was in* 1846. The total tonnage, domestic and foreign, cleared in the last year, excluding California, shows a diminution, as compared with the previous one, of no less than 248,000 tons, with a diminution of crews to the extent of 9183 men and boys; and, while the American tonnage has largely decreased, the foreign has largely increased. Nevertheless, at this moment, when we have less to export, and fewer men to import, Congress is besieged by applicants for aid to new lines of steamships for every part of Europe and Asia, and immense ships are to be built for carrying negroes to Africa and bringing men from Ireland and Germany, when, from the diminished production of food and clothing, all the inducements for coming to this country are rapidly passing away. It is a delusion never exceeded, except perhaps in England in 1846, and the results here must be the same as those which have been witnessed there—utter ruin. Nevertheless, every new steam-ship and every new road, either made or projected, is chronicled, and will continue to be chronicled, as an evidence of "prosperity," although the quantity of things to be carried in ships, and on roads, is rapidly diminishing, and will continue to diminish as we abandon old machines, now productive, to create new ones for future production.

It has been seen that under the existing commercial system,—which not only prevents any increase in the amount of population employed in the work of producing coal, iron, or cloth, but is rapidly closing all the mines, and mills, and furnaces of the country, and driving population to the West, there to enter into competition with the farmers and planters of the older States,—the quantity of commodities arriving at New Orleans, or passing on the New York canals, is rapidly decreasing. The necessary consequence of this, is a diminution in the demand for steamboats, and thus is the demand for labour diminishing in every department of employment, except in that of creating new farms to become at some future time productive of commodities, and new roads on which to carry those products, when there shall be any to send. The building of steamboats at Cincinnati, in 1845–6, amounted to.. 5,657 tons.

In the following year it reached..... 8,268
And in 1847–8.....10,232
Since then it has rapidly retrograded. In 1847–8 it was... 7,281
And in 1849–50 only..... 4,561

being lower than it was five years since, under a system that was then denounced as anti-commercial.

Of one thing, and one alone, we produce more than we did in 1846, and that is GOLD. Of that we obtain, and may for some years continue to obtain as much as would purchase the coal and iron that could be obtained from our now abandoned mines, and furnaces, and rolling mills—but where else we are to look for compensation for our diminished production of cotton and of wool, of cotton and woollen cloth, of tobacco and of rice, and for an export of food diminished below the point at which it stood on the day on which was passed the tariff of 1846, notwithstanding an augmentation of agricultural

population amounting to almost, if not quite, four millions, I am unable to see. It is not in our foreign trade, for we have less to sell. It is not in our shipping, for we have less to transport. It is not in our roads, for their actual value, free from foreign debt, is little more than it was four years since. So far as it may be derived from an addition of almost a hundred millions to our foreign debt, and almost six millions to the yearly demand for interest, we have them, and to them alone must we look for compensation for the destruction of the happiness and the hopes of almost hundreds of thousands of families, deprived of employment, and almost of bread, by the tariff of 1846.

From 1830 to 1834, the value of imports, paid for by our exports and by the earnings of shipping, increased gradually and steadily, until, from $4.32 per head, it grew to more than $7, making *an increase* of per cent. 60

At the close of the compromise period, with a horizontal tariff of 20 per cent., the country had become so impoverished that, while paying little interest on its debt, the power to import was only $4.48 per head, showing *a decrease* of nearly per cent. 40

From that period to 1847, it rose gradually, until, notwithstanding the heavy demands for back interest, and the redemption of a considerable amount of debt, it reached $7, making, with the interest about $7.60, or *an increase* of per cent. 50

In 1848 the amount paid for was under *six dollars* per head, and in 1849, little over *five dollars* per head.

For the last year, the total imports, including specie, were..	$187,217,754
The foreign exports, including specie, were	14,951,808
	$172,265,946
If we now deduct from this the debt created, because of the diminishing power to send abroad commodities in payment for those we require, say only.....	47,265,946
we have, as the total amount paid for by our exports and our shipping	$125,000,000

The population is estimated at *twenty-four* millions, at which rate the imports would be about $5.12 per head; but taking it at twenty-three millions, it would be about $5.40, being about *twenty-three per cent. less than it was four years since.* It must now be recollected that it is always assumed that protection diminishes the power to consume foreign commodities, and that the object of the change of 1846 was that of increasing the power to consume them. The facts, however, show that the power of consumption grew rapidly under the protective tariff of 1828, diminished under the compromise until it reached its lowest point at the close of the free-trade period, increased rapidly under the tariff of 1842, and is now steadily and rapidly diminishing under that of 1846. Here is a constant fact that *must* be accounted for by those who seek to attain freedom of trade by any other means than those of *adequate and complete protection.*

The reason of this is simple. When men produce largely of food, they can consume largely of cloth. When they produce largely of coal and iron, they can buy largely of coffee, sugar, and silks. Under the protective system the productive power of labour and capital increases, while under that commonly known by the name of "free-trade," it diminishes. Adam Smith taught that the nearer the men who made exchanges, the more they would have to exchange; and the greater the tendency to consume on the land the products of the land, the richer would grow the farmer and his land. His successors of the modern English politico-economical school teach

the reverse, and the result may be seen in the fact of the steadily diminishing productive power of Great Britain and her colonies.

Under the protective tariff of 1828, the REVENUE FROM IMPORTS increased with such rapidity that it was found necessary to *establish free trade* in coffee, tea, and many other commodities. Under the Compromise tariff it rose at first, while we had credit abroad, but afterwards fell so rapidly that the nation was compelled to beg for loans. Under the tariff of 1842 it rose to a higher point than had ever before been reached, and we not only paid for our imports, but paid off a large amount of back debt and interest, besides paying current interest to the extent of almost twelve millions yearly. The net receipts of the current year are estimated at $43,500,000, and if they should amount to that sum, they will involve the creation of a foreign debt of not less than sixty millions of dollars, the duties on which would be at least fifteen millions, thus reducing the real revenue derived from sales of our products and from earnings of our shipping, to about the point at which it stood in 1844–5, six years since, during which the population must have increased nearly one fourth. Excess of revenue, derived from foreign loans, under the compromise, led to almost bankruptcy of the National Treasury, and such must again be the result, so soon as the power to contract further debt shall have ceased.

With the loss of revenue, the necessity for revenue will not diminish. The system of 1846 looks abroad. It seeks the dispersion of our people from Nicaragua to the remotest parts of Canada. It looks to seizing on the commerce of Japan. It needs armies, and fleets, and expensive and useless embassies. It involves us in discussions about foreign territory. It is warlike in all its aspects. That of 1842 looked to home, and was peaceful in its character. The latter looked to cheap government, while the former looks to an imitation of the wasteful and ruinous system of Europe. That such is the fact, may be seen by an examination of the following comparison of the PUBLIC EXPENDITURE under the system which seeks free trade by aid of a protective system that shall destroy the monopoly system of England, and that under a system which looks to driving our whole population into agriculture, that they may be compelled to look abroad for a market for their products, the prices of which are to be fixed in England; and to look abroad for a market in which to buy their iron and cloth, the prices of which are also to be fixed in England, who is thus to be maintained in the enjoyment of her monopoly, by means of which she has already ruined every country dependent upon her.

American Free Trade System.	Per Annum.	*English Monopoly System.*	Per Annum.
1829 to 1834	16,800,000	1834 to 1841	31,700,000
1843 to 1845	20,700,000	1846 to 1849	44,500,000
		1850–51	51,500,000

It would seem to be incumbent upon those who talk of "free trade" and direct taxation, to explain why it is that every effort on our part at imitating the British system of policy, and every effort we make at crushing our producers of coal, cloth and iron, is attended with an increase of expenditure, and increase of government patronage, whereas every effort made towards the annihilation of the British monopoly system and the establishment of an American policy, is attended with a diminution of expenditure and of government patronage.

Prior to the passage of the tariff of 1828, NATIONAL CREDIT had no existence. The nation was weak, and it had no power to enforce observance of its rights. The period from 1830 to 1834 exhibited a remarkable instance of the growth of national wealth, credit, and power. With each step in the

progress of the compromise, all declined, and in its closing years they came near to utter annihilation. With the tariff of 1842, all grew again, and the year 1846 saw the nation arrive at a height of WEALTH, CREDIT, and POWER beyond the anticipations of even the most sanguine men. What will be their condition after the next revulsion, with a debt of four hundred millions, requiring the payment of twenty-four millions for interest, and an expenditure of fifty millions, with a revenue of twenty-five—and what will be the attention then given to their remonstrances against British colonization, time will show.

The American free-trade system looks to the concentration of man, and the increase of the power of men to associate for the improvement of their common condition, whether physical, moral, intellectual, or political. It looks to the maintenance of peace, and the establishment of freedom throughout the world.

The British monopoly system looks to the dispersion of man, and the diminution of the power of men to associate for any purpose connected with the improvement of their condition. It looks to cheap labour and the degradation of the labourer. It looks to the monopoly of land, the destruction of cottages, the expulsion of their inmates, and the establishment of a daily increasing "competition" for poor food, worse clothing, and still worse shelter. It looks to the conversion of the free occupant of land into the slave of the middleman who owns the cotton or the woollen mills. It has ruined and enslaved the people of Ireland and India, and will do the same by us whenever we shall determine to abandon the doctrines of Adam Smith, and adopt those of the modern "free-trade" school of England. It looks to universal war, and the destruction of freedom throughout the world. The first is the system of 1842. The latter is that of 1846, and it is for the people to choose between them.

I would now beg the reader to turn to the first page of this chapter, and see what were the objections to the tariff of 1842, that were to be remedied by that of 1846. It was asserted that the former diverted labour and capital from profitable to unprofitable employments, and that, under the latter, labour and capital would become more productive, yet we find them *everywhere* less productive than they were four years since. It was asserted that the former imposed heavy taxes upon *the many* for the benefit of *the few*, and that the effect was that of diminishing the power to consume cloth, iron, and fuel, yet the consumption is less than it was four years since. With twenty-four millions of people, we produce less than were then produced by twenty-one —we consume less—and we trade far less; except so far as we are enabled to trade on the credit that was created by the operation of the tariff of 1842. Which is really the free-trade system, the advocates of the tariff of 1846 may now determine. I have always been disposed to believe that one great object of freedom of trade was that of increasing trade, but the modern system of "free trade" looks undoubtedly to its diminution.

If we now compare these facts with those of 1836, we shall find a degree of resemblance so great as to be almost, if not quite, startling.

There was then no demand for capital for the building of cotton or woollen mills, or furnaces, or for the opening of coal or ore mines, and the consequence was that the rate of profit was very low, while the price of dividend paying stocks was very high, indicating a diminished return to capital. *So is it now.*

There was then a rush to create stocks of all kinds, by aid of which to secure the use of this unemployed capital for the making of roads. *So is it now.*

There was then a rush of emigration from the old States to the new, the old farms and plantations being abandoned, that labour might be employed creating new ones. *So is it now.*

There was then a growing feeling of the *necessity* for roads, and an equally growing feeling of the absence of *power* to make them without governmental aid. *So is it now.*

There was then a growing disposition to grant such aid for the purpose. *So is it now.*

There was then a growing tendency to the transfer of labour from production to machine-making. *So is it now.*

There was then a steady diminution in the amount of production. *So is it now.*

There was then a steady rise in the price of the first necessaries of life, consequent upon diminished production. *So is it now.*

There was then a stoppage of the growth of immigration, because of the diminished reward of labour. *So is it now.*

There was then a diminished consumption of food, and cloth, and iron. *So is it now.*

There was then a diminished power of exporting commodities with which to pay for cloth and iron. *So is it now.*

There was then a daily increasing necessity for purchasing merchandise on credit. *So is it now.*

There was then a steadily diminishing demand for shipping, with steady diminution in the return to capital so employed. *So is it now.*

There was then a daily *increase* in the amount of interest to be paid abroad, with daily *decrease* in the quantity of commodities with which to pay it. *So is it now.*

There was then a daily increase in the receipts into the Treasury, consequent upon the growth of speculation, requiring iron to be imported for the use of roads. *So is it now.*

There was then a daily increase in the demands upon the Treasury in aid of roads and other improvements. *So is it now.*

We were then, according to the newspapers, highly "prosperous," and the more our production diminished, the higher were prices, and the more "prosperous" we became. *So is it now.*

What was the result of that "prosperity" we know full well. What will be the result of the present "prosperity" we all shall know. The only difference between the two periods consists in this: in the former one our schemes were moderate, being limited within the Mississippi, while in the present period they embrace the whole northern portion of the continent, from the Isthmus of Panama to and including both the Canadas, and from the Atlantic coast to that of the Pacific, and from a great steam communication with India and China on one side, to an equally great one with Africa and Europe on the other.

It would seem to be incumbent on those who advocate the present system as being the one by which we shall reach "free trade," to explain why it was that the compromise, after having reduced the nation to a state of ruin, terminated in the tariff of 1842. Instead, however, of undertaking to explain troublesome facts, they repeat the words "free trade, free trade," and nothing else. We are all free traders, and for myself I can say that I have such an admiration of perfect freedom of trade that the sacrifice should be considerable that would prevent my advocating any measure tending to produce it I cannot, however, close my eyes to the fact that freedom, whether of man or of trade, has everywhere been the accompaniment of growing wealth, as a tendency adverse to freedom has everywhere been the accompaniment of

diminishing production and diminishing wealth, nor can I refrain from asserting *that in the direction of the tariff of* 1846, *freedom of trade can never be reached.* If it can, let the "free-trade" journals for once undertake the discussion of the matter, and explain how the facts and the theory can be made to agree. This would seem to be a far more creditable, as well as honest course, than that of shouting "free trade," and denouncing as "obsolete," opinions entertained at this moment by a large majority of the free population of the Union, but which they are prevented from carrying into practice by the fact that the *constitution, by virtue of federal numbers, secures to the minority the right of making laws for the majority.** In this fact may be found the cause of the existence of free-soilism. To this fact will be due the dissolution of the Union, should such an event unhappily occur. Is it not then desirable that we should *inquire* and endeavour to find the real truth? Is it not assuming a great "responsibility" to advocate any system of measures when it is even possible that they may have such an unhappy effect? Is such a course becoming of statesmen, or of those who undertake to be the teachers of statesmen? I certainly think not.

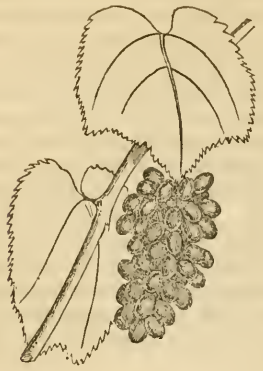
ON THE CULTIVATION OF THE VINE.

If any exhibition of supineness, on the part of land-holders and of persons holding the smallest tenements in the country, could surprise us, it would be the almost universal neglect to provide even their own tables with a fruit, than which none is more delicious, more wholesome, or of easier cultivation. We say nothing here of the millions expended for imported wines, which we ought, and which our friends in Cincinnati will show at the great Exhibition in London we can, manufacture, because—it seems to be the fixed policy of government, that we shall not avail ourselves of our own materials beyond the production and use of them in the rawest and rudest state in which we can raise or dig them from the ground; yet one would hope that now, since we have overrun and conquered large provinces of Mexico, where the climate is peculiarly adapted and the people habituated to the rearing of the vine and the manufacture of wine as a business, we would accompany the mace of authority with the mantle of protection in their accustomed industry. Oh! that since might is everywhere right—might could also be everywhere enlightened!

Varieties.—Several attempts have been made to classify the varieties of this species, but not with much success. In most cases, the form and colour of the fruit alone have been considered, and in others the shape and clothing of the leaves; but, as it will be impossible for us to enter into all of these considerations, we shall only treat of a few of

* The entire exclusion of any views but their own in relation to this important subject is most remarkable, and affords strong reason for doubting if the editors of those journals themselves are fully satisfied that their theory would bear examination. The readers of the *Union*, the *Journal of Commerce*, the *Evening Post*, or the *Public Ledger*, would only be made stronger in their anti-protective faith by a bad argument in favor of protection, and yet the editors of those journals never willingly permit the insertion of a line on that side of the question. They seem to forget that "free trade" in ideas is quite as important as "free trade" in cloth and iron. In this respect the editors who advocate protection prove themselves better "free traders" than their opponents, for I know of no one of them that would not *accept* the offer of printing both sides of the argument, on the single condition that his opponent should do the same, and I know of no "free-trader" that would not be likely to *refuse* it.

those that have successfully been brought under cultivation, which are as follows:



1. V. L. ISABELLA, Prince. *Isabella Grape-vine.*—This variety is distinguished by its large, dark-purple fruit, of an oval form, and of a juicy, musky flavor. It possesses great vigor of growth, is a healthy and abundant bearer of fruit, and what renders it exceedingly valuable in our climate is, that it requires but little protection during winter.—Concerning its origin and history, we are indebted to General Joseph Swift, of Geneva, New-York, for the following account, which we trust will be no less acceptable in coming from so respectable a source, than in the interest elicited in so valuable a production. It appears that Gen. Smith, of Smithville, North Carolina, in 1808, procured from Dorchester, South Carolina, several roots and cuttings of a hybrid vine, which, it is said, had been originated there by some families of Huguenots, between the Burgundy grape of Europe, and the native Fox grape of that vicinity. In the year 1817, a vine produced from these cuttings was transplanted from Smithville, by Mrs. Isabella Gibbs, in honor of whom this variety was named, to the garden then owned by her husband, Col. George Gibbs, which was situated along the southerly side of Cranberry, between Willow and Columbia streets, in Brooklyn, New-York. In 1819, the garden was purchased by Gen. Swift, who very generously distributed roots and cuttings of this vine among his neighbors and others—more especially to the late Wm. Prince, of Flushing, Long Island; through whose efforts it became widely disseminated throughout the Union, and was sent to several countries in Europe, Madeira, &c. The garden has since been divided into lots, and occupied by buildings; and the original Isabella vine, after attaining a circumference of more than a foot, was severed to the ground in 1838. Fortunately, however, several vigorous vines have since sprung up from the roots, which continue to bear fruit in abundance. From other statements, it would seem that this variety is not a hybrid, but was known in this country prior to 1800.

2. V. L. BACOIS ALBIS, London. *Bland's Pale-red Grape, Bland's Fox Grape, Bland's Virginia Grape, Red Scuppernong Grape, Carolina Grape, Mazzei Grape.*—This variety may be known by its pale-green leaves, lengthened clusters, with large berries, of a roundish or oblate form, pale-red color, and sweet, juicy pulp, of a pleasant flavor; in some cases, however, at full maturity, the fruit is said to acquire a dark-purple or red-wine color. It is more esteemed by some, as a table fruit, than that of the Isabella, having a thinner skin, and containing a pulp of less consistency. It was deemed for some time as unsuitable for our northern climate; but it has been found to succeed in maturing its fruit in most seasons, in the neighborhood of New-York, and may successfully be cultivated as a wall fruit in a much higher latitude, both in Europe and America. It has been contended that this variety was brought from Italy by Mazzei; but it is well known that it was cultivated by Col. Bland, of Virginia, long before that gentleman visited this country. The original vine is said to have been found on the Eastern Shore of Maryland, by Mr. Bland, who presented cuttings of it to the late Wm. Bartram and Samuel Powel, of Philadelphia, and some of the persons who received slips of it from the latter gentleman gave it the cognomen of *Powel Grape.*

3. V. L. CATAWBIENSIS. *Catawba Grape-vine.*—The fruit of this variety occurs in loose bunches, of an inconsiderable size, and of a beautiful appearance. The berries are large, and much varied in their flavor and color, according to their exposure to the rays of the sun. Those which receive the full effect of the sun are of a bluish-purple, and a slight musky flavor; but, when partially exposed, they are of a lilac hue, and those which grow entirely in the shade are of a translucent white, sweet, and devoid of musk in their taste. The fruit is earlier in ripening than that of the preceding variety, and, when allowed to remain on the vine until perfectly mature, the pulp nearly disappears. It is esteemed as a table grape, and has also been manufactured into an excellent wine. The original vine is said to have been procured from the banks of the Catawba, and planted in the garden of the late Mr. Schell, at Clarksburg, in Maryland, and has been known to bear nearly eight bushels of fruit in a single season.

4. V. L. ELSINBURGENSIS, Prince. *Elsanborough Grape-vine.*—This variety is noted for its sweet, juicy fruit, which is free from pulp, and musky taste. The clusters are of a medium size, with loose berries of a blue color, which are said to make an agreeable wine. Its foliage is of a pale-green, and resembles that of the wine-bearing grape of Europe, more, perhaps, than that of any other American variety. It somewhat resembles the Isabella in its bark and wood, but its fruit is thought to assimilate more nearly to that of the Meunier, of France. The original vine

was found and brought under cultivation by Dr. Hulings, in Elsanborough, in New-Jersey, where, undoubtedly, it was indigenous.

Soil and Situation.—The Isabella grape-vine flourishes best in a soil that is neither poor nor exceedingly rich, rather loose than compact, moderately moist, instead of being wet or very dry, and is free from an excess of salts, pernicious gases, and corruption; and in general, land recently cleared of wood is preferable to that which has been for some time under tillage. The situation should be chosen on moderately rising ground, rather than on that which is plain or abruptly steep, and the aspect should be inclined toward the south or east, sheltered both from the wind and intense heat of the sun, particularly during the latter half of the day, but not so much so as to impede a free circulation of air. The climate should be rather dry than moist, and warm instead of being cold. A doctrine advanced by various authors is, that the region of the maize and peach culture is also that of the wine-bearing grape of Europe. By parity of reason, the Isabella, and several other varieties, which are equally or more hardy than the European species, may be successfully cultivated from Mexico to those parts of America where the maize, or Indian corn, is to be considered a sure crop; that is, they will succeed along the shores of the Atlantic, in any parallel southward of the forty-third degree of latitude, and much farther to the northward, west of the Rocky Mountains.—The Isabella will also often prosper under circumstances considerably at variance with any of those above stated, but its fruit will not be of so fine a quality, nor so rich in its flavor.

Propagation and Management.—The Vitis labrusca Isabella, like all its congeners, may be propagated from seeds, by cuttings or layers, and by grafting or inoculation; but the mode almost universally adopted is by cuttings from the branches and roots. A simple, detailed account of the growth of a vine, from its separation from the parent stem to the period of perfecting its fruit, perhaps will convey the best idea of the process, and we will offer the following, as deduced from experience:

It was the opinion of L. Junius Moderatus Columella, a distinguished writer on husbandry, who flourished more than eighteen hundred years ago, and who owned an extensive vineyard in that part of Old Spain now called Arragon, that no kind of land whatever can be fruitful unless it be diligently, carefully and skillfully tilled, more especially when employed for vineyards. "For a vine," said he, "is a delicate, tender and weak thing, and can by no means bear with hard usage; and, for the most part, it is consumed by too much labor, and bearing too great a quantity of fruit; and, if you do not restrain it within due bounds, it perishes by its own fruitfulness.—But when it has, in some measure, strengthened and hardened itself, and attained, as it were, to the vigor of youth, it may prosper under neglect. But a young vineyard, while it is growing up, unless it receives due care and attention, will be reduced to the poorest and most starving condition, and will pine and waste away in such a manner that it can never afterward, by any experience whatsoever, be recovered and restored. Therefore, the foundations, as it were, must be laid with the greatest care; and, from the first day of planting, it must be managed like infants, with unceasing attention—which, unless we do, all our expenses will be laid out to no purpose, nor can the proper season of anything be recalled when once we let it pass." First, then, let us select a proper site of ground, and proceed at once and trench it to the full depth required. If it be situated on a plain, or in a valley, it should be dug two feet in depth, and on rising ground three; but on a hill-side, somewhat steeper, it should be turned up at least four feet, in order that the roots may penetrate beyond the reach of drouth. If the cuttings are intended to be planted in drills or rows, let there be formed trenches three feet in length, two feet in depth, and the width of a spade—leaving intervals or baulks, a yard in length, between the trenches, till the row is finished. Then, with good virgin soil, if it be at hand—if not, let it be procured from the woods—let us fill the trenches therewith, mixing it at the same time with a due proportion of leaf-mould or well-rotted manure, or, what is still better, the leaves and husks of vines, or grape-seeds, in order to quicken and strengthen the growth of the plants. If a vineyard be the object which we have in view, let the rows or drills be trenched from five to ten feet asunder, according to the surface of the ground and the latitude of the place. If the situation be on a plain, in a high degree of latitude, the rows should be eight or ten feet apart; but if it be on the side of a very steep hill, or in a low degree of latitude, five feet will be sufficient; and on moderately inclined surfaces, or in higher latitudes, six or eight feet apart will be all that is required. With regard to the direction of the rows, and the hight to which the vines should be trained, they may run in a manner that will allow them to face any point of the horizon between south and east; and they may be supported on props, or trellises from six to ten feet in hight, and even more, according to the vigor of the vines.—But in cities, and about houses in the country, single vines may be trained on the sides and ends of buildings, along the sides of fences, or on the trunks and branches of trees.

The most favorable season for planting the Isabella grape-vine in the United States is when the red-flowered maple is in bloom, which usually occurs in Georgia from the 20th to the last of February, and five or six weeks later near Philadelphia and New-York. In selecting the cuttings for a vineyard, they should be of one variety, and taken from the most fruitful part of the vine. Let us not con-

tent ourselves with single clusters, but those which are the most prolific. The greatest proportion of fruit grows from the buds on the last year's shoots next to the old wood, with the exception of the nearest eye the top buds being unfruitful and seldom bearing at all. Some prefer to plant cuttings containing a considerable portion of the old wood; but, as it is not always prudent nor economical to mutilate a favorite vine too much, it is best to select fruitful cuttings of the last year's growth, with the wood well ripened. They should be of a moderate size, short-jointed, and containing from six to eight eyes or buds in each. They should be cut off transversely from the vine, with a sharp knife, close to the old wood, and not less than two inches of blank wood should be left for the protection of the terminal buds. The ends of the cuttings that are to remain above the ground should be cut in an oblique direction, and the sloping side should be opposite the side containing the uppermost bud. If possible, they should be planted in calm weather, immediately after separation from the parent vine, and be obtained from a soil, situation and climate similar to those in which they are intended to grow; but, if any difference in these respects should unavoidably occur, it will be better to transplant from a poorer to a richer, and from a dryer to moister soil, as also from a colder to a warmer climate. But, should it be necessary to convey the cuttings from a distance, their lower ends should be immersed in a composition of fine earth, well mixed with linseed or other oil, of about the consistence of tar, as soon as they are cut off from the parent stock; at the same time taking the precaution not to cut off the top ends till the moment they are to be used.

Management during the First Year.—The ground having been prepared in the manner above described, the cuttings are next to be planted in the centers of the trenches, so that each terminal bud will be even with the surface, and directed toward the south. Then the earth must be firmly pressed round each plant, and, should it subsequently settle and leave more than one bud above the ground, more earth or mould must be added to bury them up.

As soon as the season becomes hot and dry, it will be necessary to protect the cuttings from the mid-day sun, by means of matting or other materials, which should be removed toward evening, and allow them to remain uncovered until the next morning, at about the time of the disappearance of the dew.—Strict attention must now be observed in keeping the soil around the cuttings continually moist, and, should not this be effected by natural means, it must be done by sprinkling rain or river water over them, or, what is still better, soap-suds, or other stimulating fluids, specially prepared for the purpose, but not too strong. Soon after the cuttings begin to take root, which may be known by the swelling of the buds above the surface, young shoots will gradually protrude, and the plants will require but little attention during the remainder of the season, except an occasional hoeing, to destroy the weeds, and to loosen the soil in order to admit the air and moisture about the roots. Should the season prove dry, however, and the earth around the plants become parched, it will be necessary to irrigate them frequently with rain or river water, or with prepared liquids as suggested above. Early in autumn, rub off all the buds from each plant, except two, which are to be reserved for training the ensuing year.

The method of managing the vine from the first to the sixth year, as practiced by Mr. B. E. Valentine, of Philadelphia, and published in Hoffy's "Orchardist's Companion," for 1841, is the same as that recommended by Clement Hoare, a highly esteemed writer on the cultivation of the vine, and whose mode, with a slight variation for climate or seasons, is believed to be best adapted for this species of culture of any practiced in the United States. "On the first of December, or as long as the weather remains open," says he, "the soil round the roots should not be covered over; but, as soon as frost comes, a good covering of litter or well-rotted manure must be laid over the ground, as far as the roots extend; and, if the weather be very severe, it will be better also to cover over the stem to the depth of five or six inches above the top of it. The young plant, being thus well protected from the severity of the winter, may remain in this state till the first of March.

Best Water for Plants.—It is well known that rain water is much better than spring water for promoting the growth of plants: this is owing to the former containing ammonia, and which is abundant in liquid manure. Pounded carbonate of ammonia mixed with water will quickly show the efficacy, when sprinkled on grass.

For the Plough, the Loom, and the Anvil.

DESULTORY NOTES BY AN AGRICULTURAL READER.

UNTHINKING farmers, whose "name is legion," get ruined gradually, and are finally sold out, without knowing what hurt them, for want of attending to the truth conveyed in the following few lines. I find them written on the fly leaf of a volume of the Memoirs of the Pennsylvania Agricultural Society, in the handwriting, I believe, of the late Dr. S. McCULLOH, who owned a farm adjoining the Central Race Course, near Baltimore. Should the reader say there is nothing in it that is new, I would only answer that it is none the less instructive and valuable for being old, while the neglect of the truth, and the practice it inculcates, is on that very account the more disgraceful to those who do not heed it:—

"When the value of the crop does not exceed that of the labor, seed, rent, &c., both the owner and the public suffer loss, at least equal to what the ground would have yielded in pasture; and whoever continues, injuriously to labor land for a crop to which sufficient feeding manure has not been administered to give rational expectation of a profitable result, not only hurts his own interest, but is the enemy of society."

In the same volume, same manuscript, I find the following memoranda, which, for the very reason that a judicious man thought it worth while to transcribe, we judge it worth while to preserve:—

Fence Rails.—For post and rail, $1 to $1 10 per cwt. *Posts*, $4 per cwt. *Worm rails*, 75 cents per cwt. *Rails* for garden, 60 cents per hundred. *Stone fence*, 3 feet at base, 9 inches under ground, 4½ above ground, 15 inches broad at top; cost of building $1 to $1 25 per perch of 16½ feet in length. [Of course the farmer found the stone.]

To measure the contents of a log in solid feet of timber, take one fourth of the girth and multiply the length of the stick by it.

	Fahrenheit.
POTATOES, whether in spring or autumn, have their leaves affected and their growth checked by cold at	30
Ditto—The stem attacked and its further growth prevented, and if in autumn the root makes no further progress at	28
Green Peas and Barley, when the ear is first becoming milky, spoiled at	2
Beans, when green or wet,	27
Oats, when the ear is milky,	26
Ditto, ditto, when green, and the ear watery, on *porous soils*, not much hurt at	25
Ditto, ditto, on firm clay,	22
Clover in the tender leaf hurt at	20
Clover and rye grass, in May or June, the crop is ruined at	23
Turnips on the ground in winter, injured at	8

"It is said these hard frosts do not injure plants unless they continue till the sun be above the horizon; when the frost goes off before morning, and the sky is overcast with fresh clouds, plants escape unhurt, though they may have suffered a pretty severe frost during the night. The philosophy of this well-known fact is obvious: it is not the frost, even though 8 or 9 degrees below the freezing point, that primarily injures the vegetable; it is the sudden transition from cold to warmth, and the consequently too rapid expansion occasioned by the heat of the solar rays, that tears

asunder the tender vesicles of the plants, and is often fatal to their future growth."

All the philosophy of the above, which we find by accident in this old book, has lately been brought forward in England as a new discovery.

The proportion of live to net dead weight in sheep is as 20 to 12. Thus, a sheep weighing 100 alive, will give 60 pounds of "butcher's meat."

As emblematic of the esteem in which *wool* has for centuries been held in England, the Lord Chancellor's seat is made of wool covered with velvet, and called the *woolsack*. On the same principle, considering how many hundred thousand dollars revenue are lost to the farmers of the several States from the reverence paid by our law-givers to curs of "high and low degree," our Chancellors' seats should be made of *dog's hair*, and be called the *dog's-hair sack*.

In an essay to which the prize was awarded by the Royal Agricultural Society of England lately, the writer says:—

The disuse of such fine wool bred in England in making English broadcloth has arisen from two causes: First, [he says,] a *slight deterioration* in the quality of fine British wool for fulling purposes; and secondly, the increased attention paid in recent years to the growth of wool in Spain, Germany, Austria, &c., where the efforts in improving the fineness of the fleece have been seconded by *natural causes,—warmer and drier climate, a somewhat arid soil, and consequently not so luxuriant a pasture.*

This should be encouraging to landholders in Georgia, Alabama, Texas, &c. Our Mexican territories are destined to be great sheep walks; full protection to woollen manufactures would soon assure it.

Those who rear domestic animals in mountain regions will do well to remember, that every additional elevation of 366 feet is equal to a fall of one degree of temperature.

One fifth of the cattle formerly perished by *starvation* as a regular system in England, according to Youatt. How long since farmers in some American States were sadly "put out" if there were not *murrain* hides enough to shoe their people?

Sea and Land Breezes.—Every one has read or heard of them; but all don't know the cause. It is this: Through the day the land is more heated by the sun, and as warm air is lighter and gives place to colder air, the motion of the air (in other words wind, which is air in motion) is from the sea to the land—but during the night, the land being cooled by radiation, the motion of the air is in the opposite direction; and then the sailor at the helm feels the land breeze coming off to cool his brow, and dispose him to meditation, and to think of wife, children, sweetheart and friends. Thus if a town takes fire, as New-York did, in a calm morning, the air becomes quickly rarified and the wind rises and comes in with a rush to fill up the vacuum. So a bladder filled with

cool air, will soon burst by its expansion when exposed to the heat of the fire. That's the cause of *sea and land breezes.* These may appear to wise men to be small matters, but the philosophy even of many such things is not understood by some would be very wise men!

American farmers are apt, and have even *been taught*, to undervalue the *importance of draining.* The following remark by an able writer on the effects of climate on cultivation in England, will perhaps serve to impress it on the mind of the reader:—

Now, all the rain that falls upon our fields must either be carried away by *natural* or *artificial* drainage, or, having thoroughly saturated the soil on which it falls, be left upon the surface to be carried off by evaporation. Now, every gallon of water thus carried off by evaporation requires as much heat as would raise five and a half gallons from the freezing to the boiling point! Without going to extreme cases, the great effects of the heat thus lost upon vegetation cannot fail to be striking, and I have frequently found the soil of a field well drained higher in temperature from 10° to 15° than that of another field which had not been drained, though in every other respect the soils were similar.* I have observed the effects of this on the growing crops, and I have seen not only a much inferior crop on the undrained field, but that crop harvested fully three weeks after the other, and owing to this circumstance and the setting in of unsettled weather (which frequently in our climate does set in about the autumnal equinox,) I have seen even that crop deteriorated fully ten per cent. in value.

I leave you, Mr. Editor, to say, whether these are not facts and principles which ought to be taught the sons of farmers while at school! Instead of which they are fed on the namby-pamby diet served up in "*Readers for Academies and High Schools, consisting of Selections in prose and verse,*" as for example: "*King Henry's visits to Wolsey's House*"—"*A Poet's Praise of his Lady*"—"*A Moon-light Night with fine music,*" &c.

Sprengel on Animal Manures, supposes that a cow produces 15,000 pounds of urine yearly. On this subject, Mr. Pusey says one farmer distributed the urine of 30 beasts *unmixed* with water, having so kept it throughout the winter. "I feel bound [he adds] to point out the heavy loss he has thus incurred." According to Sprengel the contents of a cow's urine stand thus:—

Water	92.624½
Urea	4.000
Free ammonia	205
Other matters	3.171
	100.000

* Since writing the text, I have read, in the "Quarterly Review," an article on Draining, and in which I find the writer takes a similar view of the bad effects of leaving land undrained; and states, that 1 lb. of water evaporated from 1000 lbs. of soil, will depress the temperature of the whole 10°. Now, the temperature of the ground 3 feet below the surface in England is rarely more than 46° to 48°; and hence rain falling during summer often of a temperature of 60° to 70°, raises the temperature of the soil as it filters through to the drains; and this is, doubtless, one reason of the fact I have often proved of the higher temperature of the soil in drained than in undrained land. It also appears, from experiments made by Mr. Parkes at Chatmoss, that the temperature of the drained soil averaged 10° more than that of soil undrained. Owing to the cause before stated, the temperature of the soil in drained land was found greater after a shower. This was, doubtless, owing to the greater temperature of the water carried down into the soil. This, as the article quoted states, is a reason of the comparative luxuriant appearance of wheat in undrained land during winter, for then the water in the land is of a higher temperature than that falling in rain, and the drained land is then colder than undrained. It appears that this winter warmth and summer cold is remarkably unfavorable to the growth and ripening of grain.

The urea is the matter from which is formed by fermentation the ammonia which we seek to detain, and Sprengel, desiring to ascertain how far water would serve the purpose, left one portion of the same urine pure and another portion mixed with an equal quantity of water: both to stand for a month. The result was as follows:—

Pure Urine.		Mixed Urine, omitting the water added.	
Water	95,442	Water	93,481
Urea	1,000	Urea	600
Ammonia, partly uncombined	487	Ammonia	1,622
Other matters	3,071	Other matters	4,297
	100,000		100,000

"The addition of water," Sprengel remarks, "has this advantage, that the diluted liquid contains nearly four times (more than three times) as much ammonia as urine left to putrefy in its natural state, though it retained only 0.4 less of urea."* He supposes that a cow produces 15,000 lbs. of urine yearly, and that by leaving pure urine in a tank we should thus lose 162 lbs. of ammonia, which, at Mr. Way's estimate of 6d. per lb., would be a yearly loss of four pounds sterling per cow; and this too, as compared with the mixed urine.

The loss of ammonia on the mixed urine is severe, amounting in fact to one fifth. Well may Sprengel say, "Whoever is obliged for want of straw to collect the urine separately, whoever, if compelled to do this, mixes no water with it, or fails also to employ some neutralizing substance to combine with the ammonia, suffers a loss of manure which exceeds all belief."

In Switzerland they think so much of liquid manure, and are so careful of what we throw away, that they withdraw the straw litter from their cattle twice a week to *wash and replace it!* Liquid manure, however, cannot come into general use in this country; labor is too dear; the handling is too expensive. The most that can, and *that* ought to be done is, to have the barn-yard dished, its bottom well covered with mould and litter, and a tank and pump in the centre of it, to pump out the liquid occasionally, and with a hose spread it on the "mixen," as it is called, to prevent fire, fang, and promote fermentation.

Agricultural Improvement in the last Eight Years.—On this subject an English writer gives a striking case of the economy of *cutting* turnips for sheep. He says:—

The crop being well grown, it only remains to feed it well off. To say that for the fatting flock this should be done with the turnip-cutter, which by saving exertion to the sheep, *saves waste of his vital force*, and therefore saves food, will sound to most farmers like telling them to plough their land. Still there are districts where even the turnip-cutter is unknown. I have therefore endeavored to ascertain the profit of turnip-cutting. "If, of two lots of lambs, the one received, during winter, cut turnips, the other uncut turnips, the fold with cut turnips would be *worth* 20 *per cent.* more than the other fold. The former would sell for forty shillings a head, if the latter fetched thirty-two shillings, and the cost of cutting would be *one* shilling per head, leaving *seven* shillings clear profit upon each sheep." If this statement had been made by an amateur agriculturist, one would have been rather skeptical. It was given to me word for word by two experienced practical farmers; and I only write it down from their mouths for the consideration of their brethren in any benighted districts of England, or even Scotland, if such yet there be. Let them consider that 7s. per sheep upon turnips comes to 70s. ($17.50) per acre upon the turnip crop, nearly the average rent of land for the four years' course, till the turnips come round again. And what is the investment of capital? *Five pounds* for one best Banbury turnip-cutter, which will last for five years. We ought to hear no more of the extravagance of high farming. Your real spendthrift farmer

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*Sprengel on Animal Manures. See translation, Journal, i. 455.

is the man—penny-wise and pound-foolish—who gives whole turnips to tegs, and indulges in the luxury of couch on his fallows. Everybody, too, knows that mutton may now be grown in one year instead of four; and it would be idle to dwell on the excellence of our three great breeds; but it is not so well known how well half-bred sheep answer for early feeding.

Besides turnips and mangold wurtzel, other winter-fodder crops have been tried in England. "The white carrot is less afraid of drought than the turnip, because its deep root always burrows into moist earth, but he is rather troublesome from the necessity to dig him up and to store him; yet as 30 tons (60.000 lbs.) may be grown to the acre, the white carrot should not be abandoned upon free sandy loams."

What follows about potatoes—the reason why they should be cooked for stock—and what is said about the Jerusalem artichoke, appear to be particularly worthy of note. I want to see some of my Southern friends, whose hogs run at large—some of them even in their meadows and corn-fields—plant the *Jerusalem artichoke* in their woods and swamps. I believe, if protected for a year or two, it would offer a perpetual resource for their hogs afterwards. I am not sure that it was not so destined by Providence:—

The potato is well known to suit the west side of England; and as food for pigs does not suffer greatly from a moderate attack of the too famous disease, since they eat it when steamed; and steaming is necessary even for sound potatoes, as they consist largely of starch, the cells of which require to be burst by heat, this is the only kind of farm-cookery about which we may feel certain that it will answer; at least I feel doubtful about steaming straw; but potatoes steamed, mashed, mixed with barley meal, and left to turn sour, will, I know, fat a hundred hogs well in an open farm-yard. I mention this, because desirable as good buildings are, that work must be a slow one, and we cannot wait until it is done. In agriculture, as in other affairs, shifts must be made. If our cultivation be not improved until all our farmers have ten pounds per acre of capital, and all our landlords have put their buildings in apple-pie order, many of us, I fear, may never begin. There is another tuber, the Jerusalem artichoke, which, as food for stock, may be substituted for potatoes, and does not require to be cooked, because instead of starch it contains a similar but peculiar substance, Inuline. Its yield I have found to be on a par with the potato, about 10 tons, and it is equally nutritious. It is a field crop in Alsace; and I have a piece which has stood for five years. It is the least troublesome of all crops, taking care of itself. The roots are dug up when wanted in winter, dreading no frost; and so many remain behind that you have only to give a ploughing in spring, with a coat of dung, if required. It deserves to be tried on a small scale, in any out of the way field.

Fifty dollars an acre is the general floating estimate in England to carry on "*high farming*"—that is, the tenant renting 200 acres should have $10,000 in hand to lay in the proper description and quantity of stock, implements, manure, &c. But Mr. Pusey says, "Farming myself, of course high, I cannot bring my own investment to more than $30 an acre, a sum which I believe, with sheep farming at least, to be an ample allowance for the highest possible farming." There is nothing more deteriorating to American agriculture than the general want of a sufficient number of *well-contrived implements and machinery*, unless it be the forgetfulness of farmers, *how indispensable it is to restore* the elements of fertility that are constantly extracted from and carried off the land, and more especially where the system followed is grain, and tobacco, and cotton cultivation; the produce to be carried and consumed off the land, instead of root culture under which the produce is consumed *on the land*.

ON THE HEADS OF ANIMALS.

VARIETIES OF SHEEP.

No part of the frame-work of animals, whether races of men or beasts, serves so well as the *head* to indicate the family to which they belong even if it does not show the particular temper and character of the individual.

Thus people accustomed to notice the marks that distinguish from each other the various breeds of horses and cattle at once, on a view of the head alone—the fine muzzle, full eye, thin skin, silken coat, well-defined veins, and hard flinty bone of the high-bred southern courser, will at once distinguish him from the soft-boned, coarse-haired, cold-blooded, flabby and phlegmatic Conestoga; and in like manner, on a view even of a herd of beef cattle, will be prepared with confidence to say, as it passes—This is touched with the blood of the Alderney, or Channel Islands breed, as seen in the ewe neck and deer-like head; that shows the neat head and square frame of the short horn; this again betrays the blood of the Hereford, and that of the Devon, while that beyond sports the long drooping horn of the Bakewell, carrying all his fat veneered on the outside of his frame.

Here we give the *heads* only of two well-known breeds of sheep. The first is that of a Cheviot tup.

The only importation of this race, of which we are aware, was by the Farmer of Marshfield, who probably designed them for his native granite hills of New-Hampshire, so well typified by the compact, close-grained, solid nature of his own mind, and mode of reasoning.

The name of this family of the ovine race, implies their origin in the Cheviot Hills of Northumberland. They occupy, in fact, nearly all the pastoral hills in the south of Scotland, and the best part of the Grampian mountains, and may be regarded as a hardy race, and ought, one would think, to be well suited to the mountainous ranges of our country from Alleghany to Alabama—a high, moist, and verdant, but healthy and delightful region, that needs only classical associations to elevate it in the public regard, even above the far-famed climate of Italy. Yes! there is probably no spot on the globe superior in delightfulness of climate to the mountain lands of Maryland, Virginia, the Carolinas, Georgia, and Eastern Kentucky, and Tennessee.

The wool of the Cheviot is short, thick set, and of rather fine quality, fit for the manufacture of inferior broadcloths. In this breed, the fore-quarters are lighter, in proportion to the whole carcass, than in the Bakewell. The flesh is said to be "fine-grained, often well intermixed with fat, and is generally esteemed for the table;" but like our frontier settlers, they have rather a disposition to rove and stray off, and do not come to maturity at so early an age as the Dishley or Bakewell, with the blood of which the

Cheviot would probably mingle kindly, giving to the former (a more artificial breed) more hardiness of constitution.

The portrait which illustrates this sketch represents the head of a Cheviot tup, which gained the first prize of his class at the Highland Agricultural Society's Show at Aberdeen in 1840. It will be observed that its face is longer than that of the Leicester, muzzle not so fine, eye not so full, ears set not so high and handsomely on the top of the head, while it resembles the Leicester in the white face and want of horns.

The next are portraits of quite a different character, being those of a "black-faced" *ram* and *ewe*.

The first is that of a ram exhibited at the Highland Agricultural Society's Show at Berwick-upon-Tweed, in 1841, where he took the first prize of his class.

As indicative of the long time and care with which this breed has been kept distinct and cultivated, notice the tapering face, small muzzle, and full eye! The arched nose always possessed by the black-faced ram, is said to denote boldness and courage. The legs, like the face, are covered with mottled or black hair; the horns are highly picturesque, and will bring to the remembrance of many of his old guests, one that was kept filled with snuff of the most exquisite perfume, always lying on the counter of the bar of the City Hotel, Baltimore, in the life-time of "King David," who boldly led the way in teaching the proper structure and philosophy of hotel-keeping.

The wool of the black-faced sheep is long and coarse, which renders it of little value in manufacturing. The carcass, however, is well formed, carrying its depth forward to the brisket, better than the Cheviot; yet the entire body being narrow, owing to the flatness of the ribs, gives too much lightness, or want of what is called *substance*, to the whole carcass.

The flesh is said to be fine-grained, high-flavored, and highly esteemed. This breed too, is very hardy, frequenting the highest parts of the heath-clad mountains of Scotland, and requires little care from the shepherd. We wish we had a pair to send to our esteemed friend and most accom-

plished "gentleman of the old school," Dr. B——, proprietor of the Warm Springs, Bath County, Virginia.

The reader may observe that in these cases one is called a tup, and the other a ram. These names are synonymous; but there are technical names employed in all English agricultural writings, according to the age and sex of sheep, with which every liberal-minded reader who is not, would like, once for all, to be made acquainted. At some more convenient moment that shall be done. At present we have not an atom of time or space to spare. Yet in all times and circumstances, we have no ambition, in constancy and force, like that which would lead us to add even one item of useful information to the stock of those who are to look for their bread to the cultivation of the soil, and which never was nor never will be cultivated to the highest profit and effect, when people yield to other and distant countries the profit of working up for their use the raw materials with which God in his goodness provided their own country, paying these other and distant countries for their machine-wrought manufactures with their own products made by *hand power*.

DAIRY MANAGEMENT.

We could never admit any excuse as sufficient to justify any man who keeps even one cow in not having an abundance of *milk* at least, if not of butter, for a family of moderate size. Every Farmer should provide, if only for a few of his best cows, a good *warm* shelter, abundance of litter for a *clean dry bed*, and of suitable food. The cow that won't pay, with such shelter and keep, for a quart of corn-meal a day, and a few turnips, or cabbages, or carrots, or beets, made into a good warm mess, to be given twice a day, with an abundance of cut straw—such a cow is not worth keeping; and he who has such an one, or two or three or more, and will not so provide for them, is not worthy to be called a Farmer, and deserves to have his table served without milk or butter, and, what is still worse, with a dirty table cloth and a dull carver.

As I believe the management of milch cows to be superior here to that in any part of England, it may be interesting to tell you how I manage mine, and the quantity of produce I obtain weekly. I have a boiler containing about 40 gallons, and into it I put about 50 lbs. of turnips, a considerable quantity of water, and about 12 lbs. of straw cut into chaff, and this is boiled for about two hours, when it becomes a dark nasty looking mess; one half of this is taken out into two tubs, and whilst warm 1½ lbs. of bean or pea-meal is stirred into each, and then given to each cow at about 110° of heat. That which is left in the boiler remains till morning, and if well covered up is still warm enough for use: it is then mixed with the pea or bean-meal, as before, and given to the cows at break of day. This, with hay *quantum suff.*, constitutes their daily diet; and I get about 6¼ lbs. of butter from each cow. I omitted to say I have only two cows. The butter produced in this way has no taste of turnips, and the avidity with which the cows eat this boiled mess is a good criterion of its value. When given to the cows, it should be thin and sloppy.—*Mark Lane Express.*

☞ The average price of wheat in England was lower for the past year, than for any year except one, for the last half century. Yet that is held up to us as the great grain market in exchange for which we are recommended to give up our own, and to contend against the down-trodden labor of Europe.

CUTHILL,

(HORTICULTURIST OF CAMBERWELL, NEAR LONDON.)

ON THE CULTIVATION OF THE POTATO, AND VARIOUS OTHER VEGETABLES.

SEEING this pamphlet highly recommended by Doctor LINDLEY, whose "word is the law" in such cases, we procured it particularly to see what had been written by the author, "in competition for the prize of 1000 francs, offered by the Belgian Government, for the best essay on the Potato, with reference to the *Potata rot*." Unfortunately it was received too late for this season, as the chief suggestions are confined to the care and preparation of the tubers intended for *seed potatoes*, beginning by "*greening* them when they are dug." We will preserve the whole essay, however, for what it is worth, bearing in mind to publish it in time for the preparation of the seed potato for planting.

In the meantime there are some points yet in season, and which appear to be worthy of notice. The writer premises that in ten years that he has followed the system he recommends, "*his crops have never been attacked by the disease.*"

Here are a few passages from the pamphlet:—

The ground is prepared during the winter by trenching two spades deep and laying it in ridges. The ridges ought to run north and south, this being of the greatest consequence, in order to allow of an equal action of the sun and air on the sides. Early potatoes should be planted in ridges from 18 inches to 2 feet apart, and the sets be placed at intervals of 9 inches; late potatoes ought never to be planted closer than 2 feet to 2 feet 6 inches from row to row, and 1 foot from set to set.

As soon as the ground is trenched I sow salt and soot, in the proportion of about 2 tons of salt and 30 bushels of soot to the acre. I have used no other manure than this for five years. The planting is commenced by taking up the sets carefully and placing them in the bottom of the first furrow,* the shoots being placed parallel with the ridges. The mould of the first ridge is then laid over them carefully, as the shoots are by this time 3, 4, or even 5 inches long; the next ridge is proceeded with in the same way, and so on, the ground being left at last in ridges lying directly over the sets.

When the plants come up they grow so fast that they smother the weeds if there be any. If May should be very dry as in some seasons, I am obliged to water, and when I do, of course I continue it twice a week until rain comes; for if watering be not continued you only bring up the fibres to be killed by the heat of the sun.

"Mealy" and "waxy" potatoes may be known by the growth of the eye. The mealy potato sends out a slender shoot containing little water; the waxy tuber sends out a bold, stout, but watery shoot. Waxy potatoes are such as have been taken up before ripening or have been allowed to grow during the winter.

COOKERY.—Never buy potatoes that have been washed many days and exposed to the air. Never peel them before boiling, as a large portion of the substance is thus lost; but before boiling make an incision all round through the peel, and another cross ways; this allows the steam to escape and makes the potatoes mealy; if it is not done and the skin does not crack, they will be waxy.

A melon or cucumber grower knows, or ought to know, that if he water his frames too much in dull weather and overgorge the plants, that when dry hot weather sets in, in a few days afterwards, they will have "the canker," and very often mildew; but if he had refrained from watering and shaded in hot sunshine, to give time for a regular evaporation and elaboration of the sap, these diseases would not appear. My forty-eight lights of cucumbers had not one drop of water

* If all the side shoots are removed, leaving only the main shoot, the crop will be ripe or fit to dig nearly a week before the tubers with all the shoots attached, although the crop will not be near so heavy.

this spring until they were in full bearing; the mould was very wet when put in. All greedy feeding foreign plants are liable to disease, according to their kind in such seasons as these; the sun has as much power in injuring the pores and the sap vessels after wet and sunless weather, as frost has in bursting them in winter.

With a temptation to establish a line of steamers from the waters of the lower Chesapeake, in connection with the *great cities of the North*, such as that which invites the people of Virginia and Maryland, how long would Northern enterprise forego the advantage? There are at least 2,000,000 of gaping mouths north of Cape Hatteras that ought to be fed with early vegetables and fruits—cabbages, potatoes, strawberries, beets, corn, spinach, sea kale, melons, cucumbers, rhubarb, turnips, and a thousand things for the tables of the hotels in New-York and Boston, and all the Eastern cities, before they are in blossom where they are now grown. All that is wanting is a couple of *plain, strong steamers*, which always *make business for themselves*, where they are once put on a line, just as the worm spins its riches from its own bowels.—*Ed. P., L., & A.*

Price of Wheat in England.—The average for the week, by late accounts, was 912 cents for eight bushels, weighing seventy pounds per bushel. How much will that leave to the American Farmer after paying all expenses, as *he* must do who sells abroad! Wheat can be carried to England from the Continent for less money than it can be transported three miles in England.

Free Trade *vs.* the Agricultural Interest.—We perceive, by the official returns, that the average price of British wheat, for the week ending 11th instant, was 38*s.* 1*d.* per quarter, and for the six weeks ending the same time, 39*s.* 1*d.* These facts show how gradual but how certain the decline is. The imports into Liverpool for the last fortnight are enormous, particularly of flour from France. Last week the price of wheat at Brest, *free on board*, was 32*s.*; barley, 14*s.* 7*d.*; and oats 11*s.* 4*d.* per quarter. Wheat is offered at Hamburg, free on board, at 28*s.*, and this, we are told, will leave the shippers a profit. It can be brought to this country in small foreign vessels at a rate of freight lower than the price of cartage here for three miles. The imports from France, as they never were expected, did at no time enter into any of our public calculations, but it is now seen what effect they must have upon our market. The following is the import of wheat, flour, &c., into Liverpool from foreign ports for the fortnight ending 15th January, 1851:—387,449 bushels wheat; 2,562 bags ditto; 25,712 barrels flour; 15,670 sacks ditto; 1,000 barrels Indian meal; 25,469 bushels Indian corn; 34,800 bushels beans; 150 sacks oats; 3,952 boxes cheese; 45 casks ditto.—*Liverpool Mail.*

Let the American Farmer remember that the English shilling is equal to 24 cents, and then let him pronounce on the wisdom of the policy which compels us to import continental wheat and flour, and lay it down on the wharves of Alexandria in the shape of *railroad iron!*

Beans as Cattle Food.—In 1825, a sweepstake was entered into by five East-Lothian Farmers, to be claimed by the one who should be pronounced the best feeder of cattle. In order that an equal chance should be enjoyed, Mr. Charles M'Combie, then an extensive dealer in Aberdeenshire, was instructed to forward forty long-horned Aberdeen cattle. These were of the same age, and in equal condition, and were divided as fairly as possible among the five farmers. The price was £18 per head. The cattle were put up to fatten in the second week of September. There was no restriction as to feeding. At Christmas following, they were exhibited at Haddington, and the improvement was most remarkable. The late Mr. Lee, of Skateraw, was declared the winner. He had used boiled beans throughout in feeding. The other competitors fed very high, as on draff and dregs, Swedish turnips, hay, bruised beans, and oats. The superiority of boiled beans was here proved—a fact which deserves the particular attention of cattle-feeders at the present day.—*Dickson on Breeding Live Stock.*

CLOUTED OR CLOTTED CREAM.

Most people are too apt to believe all they hear or read, while others are unreasonably dubious of all that they have not seen.

"The Society for the Diffusion of Useful Knowledge"—one of the most beneficent associations that ever was formed—gives the details for conducting this dairy process. If any reader wishes we will give it; but our object here is simply to correct an error which prevails, that clouted milk furnishes *more cream* or *more butter* than milk treated in the ordinary way. It may be that the butter will keep longer and better, and "come easier" and quicker; but as to *quantity* of cream and butter, we give the following from a prize essay of recent date. There is nothing like such *facts* to establish or to dissipate popular theories; and for ourselves, we deem it useful to *record* them, when they fall under our notice in an authentic form.

Scalded or Clouted Cream and Butter.—It is the practice in the dairies of the west of the county to adopt the Devonshire practice of warming the milk about twelve hours after it has been taken from the cow.

It is a common opinion that the object of the scalding is to extract from the milk a larger quantity of cream and butter. I was once led to doubt the correctness of this opinion, and having made many inquiries, and received the most contradictory answers, I requested an intelligent farmer's wife to make the experiment, and the following is the result:—

Twelve quarts of milk were measured and weighed, so as to be sure that the quantities were exactly equal. The result shows a difference in the weight of butter amounting to 7½ lbs. on every 100 lbs.:—

	Raw.		Scalded.	
	lbs.	oz.	lbs.	oz.
Weight of the milk before setting,	29	0	29	6
Weight of milk and cream before cream was taken off, showing loss by evaporation,	29	2	28	1
Weight of cream when taken off,	3	11	2	8
Weight of butter,	1	6	1	4½

The two specimens of butter were analyzed by Professor Way, with a view of ascertaining whether the scalding process produced a purer butter by separating the cheesy matter more completely from the butter. The result was as follows: in 100 parts of each specimen there were—

	Raw.	Scalded.
Pure butter,	79·72	79·12
Casein, with some sugar of milk and salts,	3·38	3·37
Water, (by loss,)	16·90	17·51
	100·00	100·00
Water by direct determination (drying at 212°).	17·54	17·68

As far as this experiment goes, it tends to show that there is no increase in the weight of butter, but the reverse, produced by the scalding process.

The analysis shows that the proportion of pure butter in butter made from scalded cream is not greater than that which is to be found in ordinary butter; a portion of butter is therefore left either in the butter-milk or in the skim milk, or wasted in the warming.

The practical advantages of scalding cream are, that the butter *is quickly made by stirring with the hand*, or with a stick, without the labor of long churning; and that it keeps much longer.

The first advantage may be explained by the supposition that the bubbles of casein which contain the oily matter are burst by the heat, so that the process of

churning is already more than half effected; but the analysis throws no light on the question why scalded butter keeps best. The best dairy farmers near Exeter both scald the milk and churn the cream. They find that by this plan they secure the advantages of scalded cream butter, and without any loss of quantity worth taking into account.

To the above we take room to add the following, being the last chapter in the appendix of a work entitled, "Agricultural Physiology, Animal and Vegetable; by T. Lindley Kemp, M. D.," lately published in London. We submit whether this, too, would not make for a farmer's son a better lesson in reading than much of the stuff that has come down to us from barbarous and despotic times and countries :—

MILK, BUTTER, AND CHEESE.

Milk consists of sugar, casein, salts, globules of fat, (butter,) and water. It often, in addition, contains some aromatic principle, derived from the food of the cow.

After the milk is drawn from the cow, the vital affinities which kept the carbon, oxygen, and hydrogen so combined as to form sugar, cease, and the sugar is gradually converted into another compound of these elements called lactic acid. In popular language this is called the souring of the milk.

The fat or butter is in globules, mixed with the water of the milk. These globules, when the milk is at rest, gradually ascend to the surface, taking with them a little casein, water and sugar, or lactic acid. This compound can be skimmed from the surface, and is known by the appellation—cream.

If this cream be heated, the globules of fat burst and unite together. Being lighter than the other constituents of the cream, they ascend to the surface, forming an oily fluid. This may be taken off, and if put into a cool place, it solidifies, and is in fact pure *butter*. Butter so obtained will keep a long time without becoming rancid, but it has not the taste of the butter of the shops, and is not used as an article of diet.

To obtain butter for food we apply heat, the source of which is mechanical agitation. The cream is put into a churn, the flappers of which are made rapidly to revolve. When by this procedure the temperature is raised from 4° to 10°, the globules burst and adhere together. Butter so procured, besides pure fat, contains sugar, a little casein, and any aromatic principle the cream may possess, and is more suited to our taste than the pure butter obtained by the direct application of heat.

Butter made in this manner will not keep fresh long. The sugar is converted into lactic acid; and butter in which this change has taken place, is said to have become rancid. If an access of sugar be artificially added, then this change does not take place. Common salt and saltpetre have likewise the power of retarding this change. In practice, it is usual to add a mixture of these three substances—sugar, salt, and saltpetre—to butter which it is desired to preserve for any length of time.

Casein may be obtained in a tolerably pure state by adding any acid to new milk, skim-milk, or buttermilk. When this is done, the casein, or curd as it is commonly called, falls to the bottom. The most remarkable property of casein is that it is soluble in a weak solution of potash or soda—that is to say, that it forms a compound with them which is soluble in water.

New milk contains carbonate of soda. In fresh-drawn milk the casein is combined with this, and is therefore soluble in, and held in solution by, the water of the cheese. But as the sugar of the milk is gradually converted into lactic acid, the lactic acid combines with the soda, forming lactate of soda, and the casein, now insoluble in water, falls to the bottom in lumps filled with water.

When it is desired, however, to obtain this casein artificially, it is not usual to wait until the lactic acid is naturally formed, but some acid is added. The one commonly employed, at least in this country, is the muriatic acid, as contained in the dried stomach of the calf. When this is added to milk, skim-milk, or buttermilk, the casein falls to the bottom. It is taken out of the fluid, subjected to strong pressure, to squeeze out the water which it has mixed up with it, and salted. It is now called cheese.

A SMALL KEY TO UNLOCK THE DOOR, AND TO SHOW THE BASIS OF THE SCIENCE AND PRACTICE OF AGRICULTURE.

Examine it, Farmers, and then say whether it implies any necessity for *appropriate* education and study for your sons, who are to live by tilling the soil.

Alas! with too many of you, all that you seem to care about knowing is—to what *party you belong!*—to the lead of what bell-wether you must follow!—all Whigs, or all Democrats, with no solicitude to associate and cement yourselves together, except to gain or to maintain *party supremacy!*—not to see how your sons and your daughters shall be better prepared, by timely instruction, to play the parts they are destined to perform on the active theatre of life.

So far from esteeming the bearing of public legislation on your industry and pursuits, as the *first of all questions*, to be understood and *controlled* by the Agriculturists as a class, do you not forbid any allusion to it in all associations for agricultural improvement?—leaving the question to be discussed and settled only as *sworn partisans*, all being determined, beforehand, to sink or *swim with the party to which you belong*—as servants belong to their masters!

Will you, for instance, when you have read this chapter, hand it over to the neighboring Teacher, and ask him if he will allow it to make one of the lessons in reading taught in his school? one just as likely to open up to your sons' minds matters of useful contemplation, as, for example, the lesson entitled "A Love-scene by Night in a Garden,"

"Arise, fair sun, and kill the envious moon,"

selected for the "Literary Reader" of the latest compilation.

Instead of thus using this key, it is doubtful if the greater number will not say—"Much better had you put into our hands a key to unlock some man's poultry house or dairy, to teach us once again, for the thousandth time! how many hens, and at what cost of food, may be had, a dozen eggs, or as many pounds of butter."

But to the key—examine it and use it as to you it may seem best:—

The vegetable kingdom is placed in nature intermediate between the mineral kingdom, which is submitted solely to the operation of physical laws, and actuated only by means of mechanical forces, and the animal kingdom, in which vital organization is most complex and most perfect, and where physical and chemical affinities are subordinate in energy to the refined influence of nervous power. Every thing in nature is referrible to one or the other of these three divisions, of which the first, the mineral, is distinguished by an absolute fixity of constitution, whilst the materials of which the animal is composed are in a constant state of change. If we consider a piece of marble, it contains carbon, oxygen, and calcium, and as long as it has been a piece of marble, the same proportions of these elements have formed it; but if we consider an animal, it is composed of numerous elements which have little permanence of arrangement. By the very act of its living force, the materials of which it consists die, and are thrown off from the remainder, and other new elements of the same kind must be taken in their place, or else the whole animal dies. The living being, therefore, requires food to supply this want of new materials; for this food it must look abroad in nature; it must prey. The more highly organized animals (carnivorous) prey on those of an inferior vital power (herbivorous): these again on the vegetable kingdom. Thus ultimately the different kinds of plants must supply the means of sustenance to all animal bodies, for in no case is an animal able to assimilate to its organism, or use as nutritious food, a mineral material.

When, however, the term of existence of the animal has expired, and that vitality ceasing, the physical and chemical forces come into play, its constituents are restored to the mineral kingdom. The various elements which had formed its bones and muscles, its nerves and viscera, pass into simpler forms of combination, diffuse themselves in the atmosphere, or are carried off, dissolved in water; or else, entombed beneath the surface, may appear after the lapse of many ages, in rock formations, and thus become the indices of animal existence, of which all other trace might long before have vanished from the earth. From this mineral form the elements of animal existence are rescued by the aid of plants. The vegetable, penetrating with its roots deep below the surface of the ground, stretching with its stems and branches into the atmosphere, and moistened by the showers, takes from these various sources the elements necessary for organic beings, elaborates them into the numerous products which are capable of being used as food, and on which animals are fed. The various departments of nature are thus correlative and mutually compensating. The same elements pass successively from the mineral to the vegetable, and from that to the animal existence, and by the dissolution of the latter, again back to the mineral kingdom, to be the foundation of another and similar series. When we see in summer the country rich with luxuriant crops, gay with foliage and flowers, where in winter all had appeared dead and desert-looking; when we find new generations of animals replacing those that die, and that the number of living beings does not diminish, it is important for us to recollect, that there is still no new element added to those already existing on the globe, that the condition of the materials of our earth is one of unceasing change; assuming many forms, they pass from mineral to plant, from plant to animal, and hence the growth and sustenance of an animal depend on the nature of the plants on which it is fed, and the growth and development of a plant upon the nature of the soil and the atmosphere, by which the mineral elements may be supplied to it.

The number of elements which are found existing in animals and plants amount to sixteen: of these the atmosphere and water may be considered as capable of supplying four, carbon, hydrogen, nitrogen and oxygen, and these are they which constitute by far the greatest proportion of every organic substance. The remaining elements, though usually present in much smaller quantity, are not less essential to the healthy existence of the plant, and must be obtained from the soil on which the plant is cultivated. The soil must, therefore, be highly complex in constitution, in order that it may yield those elements. If it do not naturally contain them, they must be artificially supplied, in order that the plants may grow. Each crop removing from the soil quantities of those materials, diminishes its power of producing future crops; and hence to sustain the fertility of any soil, the exhausting tendency of its vegetation must be compensated for by suitable additions. In these few and simple propositions is contained the clue to the most refined and successful systems of agriculture, and the objects of the philosophical agriculturist, as well as the most effective means of practically advancing husbandry, consist in:

1st. Studying the composition of the soil.

2d. Studying the action of plants upon it.

RIDDLE FOR SCOTCHMEN.

Scene: Linen-draper's Shop.

	EXPLANATION.
Old woman (looking at a piece of cloth) to the shopman—Aw oo?	*Purchaser*—All wool?
Shopman—Oo i, aw oo.	*Shopman*—Oh yes, all wool.
Woman—Aw ae oo?	*Purchaser*—All one (kind of) wool?
Shopman—Oo i, aw ae oo.	*Shopman*—Oh yes, all one wool.

NEW ALIMENTARY SUBSTANCES FOR THE WORKING CLASSES.—The French Consul at the Republic of Ecuador, has brought thence two alimentary new plants of great importance. The tuber of one, called *Hocas*, has the form of an oblong potato; the interior of the substance, however, has a red and yellow color, and the taste is that of a chestnut. The other is called *Millico*, and its form and taste is very nearly that of the potato. Both grow wild and in great abundance near Quito, even in the most meagre soil. Experiments on their propagation are now being made at the Jardin des Plantes, Paris.—*The Builder.*

For the Plough, the Loom, and the Anvil.

ON THE USE OF CHARCOAL.

BY COL. M. P. WILDER.

I NOTICE in the last number of your valuable periodical the request of Mr. Trimble, soliciting advice as to the advantages of charcoal, and the best method of using it as a manure.

I reply with pleasure, but my experience has been on a limited scale, and my operations confined rather to the garden than the farm, on account of the difficulty of procuring it in sufficient quantity for the latter purpose.

My attention was first drawn to the influence of charcoal, by the wonderful experiments of Baron Von Liebig, in the propagation of plants, and the facility with which cuttings were rooted in this substance.

Its use became very general in Europe by amateurs and cultivators of plants, and for a time it was considered as a great fertilizer. Chemists soon ascertained, however, that its chief virtue consisted in its great porosity, being able to absorb 90 per cent. of its bulk of *ammonia*.

As a medium for storing up the volatile portions of manure and compost heaps, and for absorbing the *ammonia* which descends in the snow and rain, it has probably no superior. But what renders charcoal still more valuable is its power of holding in reserve these subtle elements, and yielding them up only as they are wanted for the purposes of nutrition, and as the vital force of the root searches for food.

It will therefore readily be perceived, that charcoal is not only valuable as a component part of manures, but that its influence, *when applied alone*, is highly beneficial. Instances similar to those quoted by Mr. Trimble, where large crops had been obtained from lands on which charcoal pits had been burned years before, are frequently witnessed. In this vicinity a farmer has annually, for the last eight years, harvested extraordinary crops of hay on these charcoal lands, without the application of any manure whatever; and from the indestructibility of this substance, I know no reason why he may not continue to do so for the next twenty years to come.*

One of the most striking illustrations of its efficacy, *when applied alone*. that has come to my notice, was the experiment made by Mr. Hayward of Sandusky, Ohio, many years since, and which, if I am not mistaken, was published either in the last volume of your *Farmer's Library*, or the

* The testimony on this point is by no means uniform; some averring that they could see no difference in the crop where these kilns had been burned, while others assert the contrary. The coal brought to the Washington market from Virginia, a distance of ten or twelve miles, sells for ten cents the bushel; in New-York the price is fifteen cents. They say a cord of pine wood will make thirty bushels, equal to the price for which the wood sells in the same market, $3—in New-York, $5. But the force which would bring the cord of wood will take a hundred bushels of coal Such is the advantage of *manufacturing on the spot*, whenever it can be done. For the same reason that the farmer wants to have the mill, and the smith's shop, and the school, and the store, not only in his own country, but close to his door, he ought to desire to have the Loom and the Anvil close to the Plough; whenever the one can be supplied with the wool. and the other the iron, *here at home*. Will the time *ever* come when reason and common sense shall prevail over early prejudices and *un*-common sense?—*Edit. P., L., & A.*

P. S.—The *facts* stated are from plain working men, whom we meet selling coal in the street.

first volume of *The Plough, the Loom, and the Anvil.* The facts I think were substantially as follows: Mr. H. having prepared his coal by grinding in a mill, set apart seven lots of land for experiments, the soil and cultivation being precisely alike on each, except as it regarded the application of charcoal. The result was, that on the lots where *fifty* bushels of coal were applied, there were *twenty-five* bushels of wheat obtained, while on those lots where there was no coal applied the crop was only five or six bushels. It will be borne in mind that there was no other manure administered to the crop, and that consequently the fertilizing properties must have been imparted by the *ammonia* which was stored up in the coal.

This experiment was very satisfactory, but not more so than many others which we have witnessed, particularly in the application of charcoal to fruit trees, plants and garden vegetables; and I have yet to see the first instance where charcoal formed a part of the compost, that vegetation did not grow luxuriantly, producing the increasing and quickening effects described by Mr. Trimble. In fact, it is no unusual circumstance to notice the roots of trees and plants either clasping pieces of charcoal, or piercing them through with their fibres. The best method, where any considerable quantity is to be used, would undoubtedly be to grind the charcoal, and I should prefer that one half at least should be as coarse as Indian corn. As to the amount which may be applied to the acre, I think Mr. Hayward's experience will furnish a good criterion, although I have no doubt a larger quantity than fifty bushels to the acre, for the first dressing, might produce an increase of the crop.

If charcoal is to be applied *alone*, and without manure, the time is not material, except that it should be well incorporated with the soil, either by ploughing in, or harrowing, but not deeply. Mr. Trimble describes his soil as being "generally a strong yellow clay based upon limestone." Charcoal will no doubt prove valuable on these lands, but more so on light soils which allow the salts of manure to leach through; for clay is also a substance which holds securely the volatile portions of manure, and when made fine by the frost or otherwise, is a capital ingredient for the compost heap.

P. S. On recurrence to my file of letters I find Mr Trimble's, but which, from the circumstance of its arriving just as I was on the point of starting on a journey, was laid aside, and being "out of sight was out of mind." From the character of his land, "*limeing*" would not only be a waste, but worse than a waste of time and money, the soil being already sufficiently charged with lime. And here let me drop a word of caution, never to use lime either in conjunction with charcoal or the manure heap, on account of its disengaging the fertilizing gases and sending them off in "thin air." I beg his pardon for the neglect, and fear from the haste with which the above has been written, that it will be of little service to him or others.

Boston, March 4th, 1851. MARSHALL P. WILDER.

WEIGHT OF THE PRIZE DEVON OX. —A correspondent informs us that "the Devon ox which obtained the first prize in Class I. at the Smithfield Club Show this year, and which was purchased by Mr. King of Paddington, weighed 217 stone of 8lbs., and had over 30 stone of rough fat."—[1,736 pounds net, and 290 pounds of rough fat.]—*English Paper.*

ADULTERATION OF COFFEE.—A microscopic examination of thirty-four different qualities of coffee sold in London has lately been made, which showed that with three exceptions the whole were adulterated. Chicory was present in thirty-one instances, with the frequent addition of roasted corn, beans, or potatoes, and in some cases the quantity of coffee was not more than a fifth of the whole article.

WEAR AND TEAR OF BRITISH AND AMERICAN IRON ON THE READING RAILROAD.

TAXATION OF THIS UNION BY THE BRITISH MONOPOLY SYSTEM.

In a splendid oration "On the Life, Character, and Services of John Caldwell Calhoun," delivered by Governor Hammond at the request of the City Council of Charleston, referring to the scantiness of what is commonly called education enjoyed by Mr. C., he says: "But it may be doubted whether, having acquired the use of letters and figures, and being thus furnished with the two great keys of knowledge, there could have been a much better training for the future statesman. Pericles and Alexander were perhaps taught but little more by Anaxagoras and Aristotle, than Calhoun learned from his few books, from nature, and such men. In this school he learned *to think*, which is a vast achievement." Most cordially do we agree with him in the philosophy and the force of the truth here conveyed, especially in this last remark. Hence it is that we have so often said, in the course of more than thirty years of anxious effort to animate and elevate the Agriculturists of our country, as a class, that the great obstacle seemed to be in leading them to form a *habit of thinking!* Could that be done, we should esteem it the accomplishment of a "vast achievement," for thereafter it would be impossible that they should remain contented to pay $20,000,000 annually for the support of men whose province and business it is, exclusively, to *carry side-arms and fire-arms!* It would be impossible for them to see magnificent schools and accommodations provided for teaching to the youth of the country the use of swords and cannon, and not one dollar given for appropriate instruction for the use of the plough and the pruning-hook. It would be impossible for men, exercising the god-like faculty of thought, to see their representatives squandering millions in acres of land and in pensions even for having been "mustered" to the work of war and bloodshed, while their civil officers, however aged and eminent for vigilance and integrity, are swept by the score into abject poverty, at every turn of the political weather-cock. No thinking people, in a word, could remain contented to see the military every where exalted over civil virtues, until all good men shall come to think "the post of honor is the private station"—until every passion that can animate the human heart—avarice, the love of luxury and of power, aye, even ambition, that "malady of every extensive genius," and the noblest of all passions when well directed, are in a fair way to become aroused and enlisted in the cause of blood and slaughter!

With equal truth, as it seems to us, might it be said that could the cultivators of the soil be brought to exercise the power of thought—"a vast achievement," casting off that incubus upon the soul, *party spirit*—it would no longer be possible for them to follow, in search of genuine "free trade," the doctrines of that school *whose seat is in Manchester!* The very location of the sanctuary would lead them to distrust the revelations of the oracle.

"Timeo Danaos et dona ferentes."

The object of "free trade," as taught in the Manchester school of political economy, is that of securing *to England* a monopoly of the power of furnishing the world with cotton and woollen cloth, and iron, at prices to

be fixed by herself. The establishment of this monopoly involves, of course, another one, that of furnishing the sole market for the sale of the food, the cotton, and the sheep's wool, raised throughout the world, to be given in exchange for cloth and iron; and the more perfect this monopoly, the more exclusively England can make herself "the workshop of the world," the more perfect must be her power to tax the farmers and planters of the world by fixing the price of *all she buys*, and of *all she sells*.

The system known to the people of the Union by the name of "protection" has for its object a diminution of the necessity for resorting to the English market for the purpose of either sale or purchase, by the establishment of competition, and thus enabling the farmer and the planter to enjoy that *real* "freedom of trade" which results from *equality of power* on the part of both buyers and sellers—the one having two or more markets in which he may buy, and the other two or more in which he may sell.

The Manchester system of free trade looks thus to the destruction of all competition for the purchase of raw products, or for the sale of manufactured ones, and the establishment in the hands of the people of England of a perfect monopoly of the machinery for the production of both cloth and iron. Protection seeks the destruction of this monopoly, and the establishment of *real freedom of trade.*

The modes of resistance resorted to by the English people for securing the further existence and extension of their monopoly, are numerous and uniformly destructive of the interests of their customers, as is shown in the fact that where her monopoly is complete, as in Ireland, India, and Canada, the consumption of cloth and iron is small, and that it invariably increases in countries where protection is resorted to, and most rapidly in countries where protection is most effective. Thus we consumed, in the *free-trade* period of 1841–2, before the tariff of 1842 came into operation, less than 300,000 tons of iron; whereas in the real free-trade period of 1846–7, under the policy of 1842, before the tariff of 1846 came into full action, our consumption rose to almost a million of tons, whereas it has now fallen to about three fourths of that quantity, notwithstanding our *vast increase of population in the meantime!*

Among the modes of taxation most uniformly resorted to for the destruction of foreign competition, and the maintenance of the British monopoly, and among those against which it is most difficult to guard, is that of the *deterioration of the commodities furnished to the world.* Her cotton goods are a compound of starch and cotton wool, cheap to appearance, but worthless, and therefore dear in reality. Twenty years since it was stated by Mr. McCulloch that the quantity of flour substituted for cotton amounted annually to more than thirty millions of pounds, being the equivalent of seventy thousand bales of cotton, and it is understood to be now more than doubled; and thus is the demand for raw cotton diminished to the extent of a hundred and fifty thousand bales, while the consumption of cloth is diminished because the cost is so great in proportion to its *real value*, when compared with manufactures of flax and wool.

Our attention has been drawn to this subject by some highly interesting facts, to which we now desire to invite the attention of our readers, relative to the wear and tear of American and British iron on the Reading Railroad, and on which we implore them to exercise "the power of thought," for, as Governor Hammond says, "it *is* a power, and the greatest of all." Most of them are, we doubt not, aware that the transportation

thereon is immense, and affords to its officers an opportunity for testing the qualities of iron, such as is scarcely furnished by any other road in the world; and it is obvious from the tables now before us, that they have availed themselves of that opportunity to its fullest extent, an account having been kept in relation to every single bar removed, showing the length of time it had remained upon the road, its condition when removed, &c. &c. The result has been that of proving that for all future repairs or extensions, *true economy* leads to the use of American iron, of which a bar of fifty pounds to the yard is more valuable than an English of sixty pounds.

With the diminution of our domestic competition foreign prices are now rising, and must continue so to do as our furnaces shall gradually pass out of blast, as is shown by the recent advices from England, in which it is stated that the vast orders from this country have caused a considerable advance; and yet so great is the rage for *cheap* and worthless iron, with which to make Western and Southern roads, that the makers of them do not seem to see that they are now destroying the *competition* to which alone the present cheapness is due; thus carrying into practical effect a certain well-known fable of Æsop, called *the Goose with the Golden Eggs.* Our mines and furnaces make competition for the purchase of food, and for the sale of iron, and for the consumption of cotton and woollen cloth; but our farmers, or *their* law-givers, close those mines and furnaces that there may be less competition for the purchase of the former and for the sale of the latter, the inevitable result of which must be *cheap* food and *dear iron.* If they desire good prices for their products, they should seek to diminish the necessity for depending on the British market as the *only one* in which to sell; and if they desire to have iron cheap, they should seek to diminish their necessity for depending on that market as the *only one* in which to buy—thus ridding themselves of British monopoly, which looks to fixing the price of all they have occasion to sell, and all they desire to buy; and thus laying, in the only way in which it can be provided, a foundation and security for real freedom of trade! Will the agriculturists of Virginia think of this?

CONTINUANCE OF ENGLISH INFLUENCE

HURTFUL TO AMERICAN AGRICULTURE.

We have been so long and habitually looking to the so-called Mother Country for every thing—the association in the human mind of all things excellent with the very name of mother is so natural, and when mothers *are* good, so proper in itself—that most Americans continue to look to mother England for all that is superior in every kingdom of nature, in every branch of science, in every field of discovery, and every art and comfort of social life;—in Agriculture and Horticulture, in Sheep and Cattle, in Men and Women.

General Jackson said to Doctor Coleman, "We have been too long subject to the policy of British merchants." With equal truth the *Edinburgh Review* has recently declared the United States to be but "a colony of Great Britain in a matured state"—such is the inveteracy of national prejudices, especially where they have their foundations, how far back so ever, in the relation of parent and offspring.

We are perfectly conscious of entire freedom from an opposite feeling in this case. None can more admire the learning and the loyalty, the eloquence and the enterprise of those who have shed a lustre on the name and the arms of England; but her counsels have been animated in all time by a spirit of monopoly, aggression and conquest, that would lead her to subject the whole universe to the sway of her colonial policy. Far, alas, are we from claiming that the child has not inherited too largely, some of the worst traits of the parent; still, for one, we are of opinion that it is high time for the United States to exercise as well as to claim the functions of real independence of a country with which, patronage and appropriation, "from Indus to the poles," have always been synonymous. In a word, our apprenticeship to England has run out. We have reached the age of adolescence, and having all the materials for self-supply, of what we obtain from her, we should set up shop *bonâ fide* for ourselves, and by means of adequate, efficient protection, *realize* for ourselves those advantages which ages of monopoly and aggression have conferred upon her; and thus prepare ourselves to compete with her for the supply, not only of our own *iron* and *cloth*, but for the supply of the world with things for which Providence has bestowed the materials upon us no less than on England. And this should be done, not by depressing the wages and circumscribing the comforts of American labor down to a level with the starving population of England and of Europe—of countries from which she now derives her supplies; but it should be done by elevating American labor, and protecting it in its elevation. This can be done, as all experience has proved, not by encouraging sloth and idleness, but by a safe reliance on the effects of *competition at home*. Thus has it always happened that every protected article has fallen in price to a fair profit on the capital and labor employed in its production. It's always a cursed, diabolical system which looks to *cheapening labor!* The steadier and the higher the reward to labor, the more ample is the power of consumption, and all wages are expended in some shape or form that brings custom and profit *to the land*. Would that we had seen all this as clearly thirty-two years ago, when we commenced the attempt to enlighten, advance, and guard the interests of the Plough, as we now see it. But to use a vulgar saying, one should never "cry over spilt milk," but go ahead and do the best we can in our day and generation. Having now studied "THE PAST, THE PRESENT, AND THE FUTURE," we find it almost impossible to contemplate any branch of useful industry that does not serve to render more and more apparent our habit of *looking to England* for every means of social comfort, and for every industrial and scientific improvement—aye, even to a degree not only destructive of our best interests but derogatory to our character as an independent nation. Getting English books free of cost, our reading comes chiefly from her, while American authors are neglected.

This habit of going to England on every occasion as the great seat of science and workshop of the world, was, however, plainly on the wane, not only with us but with the nations of the world, and the game now is to revive and confirm this ancient but declining admiration and subserviency to the Mother Country, by means of the great Brobdignag Glass House Exhibition to be held there under His Royal Highness, Prince ALBERT, as long as it can be—*made to pay!*

What a blessing would it be to the whole world if English naval supremacy could be once and for ever overthrown, and all countries be made

equal on the common highway of nations!—a naval supremacy for the maintenance of which not only her own land and labor are so grievously taxed, but in opposition to which the whole civilized world is forced to keep in pay millions of men, whose entire business it is to carry swords at their sides and muskets on their shoulders. In view of her overgrown military power, kept up to enforce her monopoly of manufactures, even we are obliged, distant as we are, and popular as is the form of our Government, to expend already some $20,000,000 annually in support of our military establishments. How long before we shall rival her in her pension list of 50,000 pensioners? There is, however, one redeeming feature in her odious and oppressive system,—she pensions too for *eminent civil services*, while we, Republicans as we are, only shelf and feed those, at the public expense, whose *vocation is war*, leaving the highest civil abilities dependent, not on talent, worth, and service to the Republic, but on the *vicissitudes and corruptions of party!!*

GUANO.

SITTINGBOURNE.—GUANO.—At a late meeting of this Association, Sir J. M. Tylden gave the following results of experiments with guano:—Last autumn, I set apart three pieces, of a quarter of an acre each, of Spalding Wheat. The previous crop was Cole after Rye, after Wheat, the Cole and Rye being fed off. On No. 1, I put no manure, on No. 2 guano at the rate of 4 cwt. per acre, and on No. 3 guano at the rate of 2 cwt. per acre; the cost of No. 2 being 2*l.*, and of No. 3 1*l.* per acre. The yield of No. 1 was 3 quarters 4 bushels, and the weight of straw and horse-meat was 1664 lbs. per acre; the weight of a bushel of this Wheat, 61½ lbs.; the money value at 5*s.* per bushel for the corn, and 6*d.* for every 36 lbs. of straw and horse-meat, gives 8*l.* 16*s.* No. 2 had 4 cwt. of Peruvian guano harrowed in at sowing time. The yield per acre was 4 quarters 4 bushels and 6 and a half gallons, and the weight of straw, &c., 3936 lbs. The weight of a bushel was 61 lbs. Money value as before, 11*l.* 16*s.* 4*d.*, from which deduct 2*l.* for manure, there remains a clear gain over no manure of 1*l.* 0*s.* 4*d.*, or over 50 per cent. on the outlay. No. 3 had 2 cwt. of the same guano, sown at the same time as No. 2. The yield per acre was 4 quarters 1 bushel 6 gallons. Weight 61 lbs., and of straw, &c., 3312 lbs. Money value, deducting 1*l.* for the guano, 9*l.* 14*s.* 4*d.*, giving a clear gain over no manure of 18*s.* 4*d.*, or more than 85 per cent. In both these experiments the increase of corn has more than paid for the manure, for in No. 2 the increase was 8 bushels 6½ gallons, and in No. 3, 5 bushels 6 gallons. I also marked off 4 pieces of white Wheat, of a quarter of an acre each; two after Clover, two after Tares, followed by Cole, both fed off after Wheat. One of each had no manure, and one of each at the rate of 2 cwt. of Peruvian guano, top dressed in February last. No. 1, Clover lea, no manure, yielded 4 quarters 1 bushel 5 gallons per acre. Weight per bushel 60¾ lbs., with 3020 lbs. of straw, &c.; the money value per acre being 10*l.* 9*s.* 8*d.* No. 2, Clover lea, with guano at the rate of 2 cwt. per acre, yielded 4 quarters 4 bushels 5½ gallons per acre. Weight per bushel, 60¼ lbs. Weight of straw, 3768 lbs. The money value per acre, after deducting 1*l.* for manure, was 10*l.* 15*s.*, leaving only the small profit of 5*s.* 4*d.*, or rather more than 25 per cent. No. 3, Tares, and no manure, yielded 4 quarters 1 bushel, weighing 60 lbs., and straw, &c., 2708 lbs.; the money value of which was 10*l.* 3*s.* No. 4, Tares, &c., manured with guano at the rate of 2 cwt. per acre, yielded 4 quarters 7 bushels over half a gallon per acre, weighing 50¾ lbs.; weight of straw, &c., 3324 lbs.; the money value of which, deducting the price of manure 1*l.*, was 11*l.* 1*s.* 3*d.*, giving a profit over no manure of 18*s.* 3*d.*, or over 85 per cent., the corn more than paying for the guano; whilst on the clover lea the corn alone did not pay for the guano, the difference between that and no manure being only 3 bushels and half a gallon. The inference I draw from this is, that it would be better to use the guano on the Clover, thereby insuring a larger of Clover, and to a certainty as good a crop of Wheat.

HUNGARIAN BULL, KOSSUTH.—PROPERTY OF R. J. COLT, ESQ., PATERSON, N. J

PORTRAIT OF HUNGARIAN BULL, KOSSUTH,

PROPERTY OF R. L. COLT, ESQ., PATERSON, N. J.

Thirty years ago, 8th October, 1821, the late Judge Peters of Philadelphia addressed a letter to the editor of this journal, then conducting the *American Farmer*, on the subject of the *Culture of Flax*, *Agricultural Premiums*, *Tuscany Cattle*, *Felling of Timber*, and *Preservation of Bridges*.

We need not say that we are far from going the whole length with the Judge, in the opinion that finer horned cattle are to be seen in other countries than are to be met with in England. True it is, that much more intercourse with that country has made us more familiar with what has been done there to establish and improve the several races of domestic animals; yet it is not to be denied, that in this branch of rural industry, more money has been expended, and that expenditure has commanded more skill and been attended with more obvious and economical results in England, than in any other part of the world. Hence her improved Short-horns, Herefords, North Devons, Ayrshires, and Alderneys, are no where equalled for the shambles, the yoke, and the pail; and the power of money which has given her that superiority will be likely to maintain it;—but who of us that never saw them, shall undertake to say that for the plough and the dairy, the Hungarian and the Dutch may not claim equality with the best of England? For ourselves, we are inclined to think that no importations have more contributed to improve our milch cattle, than those which were made many years since from Holland into Delaware, Maryland, and New-York. There are still, we believe, deep traces of their blood in some that will be on sale at Fordham, in Westchester, on the 24th of June next, as advertised in this number. But to the letter from Judge Peters to the editor of *the Plough, the Loom, and the Anvil*, then editor of the *American Farmer*:—

I am pleased with your acquisition of Tuscany cattle. I have no idea that England monopolizes the best breeds of cattle. From other countries and in our own I have seen finer horned cattle than I ever saw in England.* The Flemish working cattle are superior, and no doubt so are those of Tuscany. In both these countries working oxen are the chief reliance for farming purposes. In Tuscany they use them *almost exclusively*. I wish *we* could use mules and oxen more and horses less. We should soon find out the economy.

The stolid preference of the Pennsylvania farmer for large Conestoga wagon-horses in all cases, even where the ox, the mule and the higher bred horse might well supplant them, and their partiality for great, heavy, lumbering wagons, costs that State many hundred thousand dollars annually.† The cattle referred to by Judge Peters were those offered on their ar-

* He and Mr. Jefferson were in London at the same time, and doubtless saw and associated with many of the most distinguished men of the kingdom. Mr. Jefferson is said to have remarked, however, that for genuine wit none of them equalled Judge P.

† In a highly interesting paper, on the progress of agricultural improvement in England during the last eight years, Mr. Pusey relates the results of trials between wagons and carts, which showed that in the latter five horses were more than equal to ten in wagons; and he says: "Here, indeed, since farmers have compared the two systems, no one buys wagons in stocking a farm; but no one likes to buy a new set of carts who has wagons. I should say, they had better sell their wagons while they can, and if they cannot, make a bonfire of them.

rival without any view to profit, but solely for the benefit of Agriculture, and with that intent sold to the writer, by the late Commodore Bainbridge and his friend Purser S. Hambleton, an account of which—"the DUKE and DUCHESS"—may be found at page 269 of the *American Farmer*, vol. I.*

The Hungarian bull and heifer imported by Mr. Colt exactly resemble them in color and in general contour and appearance, except that they are *less light and mule-like* in their figure, deeper in the chest, and heavier in the body. How the heifer may prove as a milker, it is perhaps too early to predict; but there can be little or no risk in believing that the blood of Kossuth, the bull, will greatly improve the working powers of our cattle, both in activity and susceptibility of bearing heat.

As more exactly historical of the importation of this pair of cattle, it is proper to add, that Mr. Colt, ever watchful for what may prove on trial to be valuable additions to our domestic animals, implements, grain, plants and poultry, was prompted to procure a bull and heifer through the agency of our diplomatic representative at Vienna, General James Watson Webb, on seeing in the Patent Office Report of 1847 the following notice, founded on his personal observation, of

THE MURZTHAL CATTLE; BY C. L. FLEICHMAN.

Agreeable as the general impression must be which Swiss cattle at the Marienthal Dairy make upon the stranger, it is *nothing when compared to the sight* reserved here for the farmer of the fine stock of Murzthal cows. *This race combines nearly every one, if not every excellence:* abundance of milk, disposition for fattening, and great strength for draft; and is raised here in its highest perfection. The full blood of this race is characterized by the small-shaped head, with broad forehead, and broad mouth, short and fine horns, extended body, broad back, and handsome neck, high and slender tail of considerable length, fine bluish hair, big udder, and on the whole by the stately and soft entire appearance.

* As we may often recur, for curious and historical facts in the Agriculture and Horticulture of our own country, to correspondence in times past with old officers of the Navy who have done more to advance those useful arts than many purse-proud landed nabobs on shore, it may be well once for all to explain, that in 1812, in the midst of the second war for Independence of England, (not yet fully established by a long shot,) the editor of this journal was induced at the repeated request of the Secretary of the Navy, acting under Mr. Madison, to accept the office of *Purser in the Navy*, which he continued to hold, with sometimes 1200 men on his pay roll, until a considerable time after he was appointed Postmaster of Baltimore, also by Mr. Madison. In the latter post he remained, being a second time unanimously confirmed by the Senate, under nomination from General Jackson, until removed by order of Mr Van Buren, who, however, professed to entertain "great respect" for the incumbent. Had the writer continued in the Navy, he would, now since the death of his life-long friend, Purser S. Hambleton, have been the senior Purser on the roll.

His official position, association, residence, and circumstances in Baltimore, brought him into constant and agreeable relations and correspondence with most of the old choice spirits of a gallant and a polished corps of gentlemen, not often equalled and never excelled in any public service—such as Rogers, Chauncey, Porter, Bainbridge, Gordon, Perry, Smith, Jones, Crane, Ridgley, not to speak of the senior officers still living, with the remembrance of their chivalrous deeds, in the grateful estimation of their country.

Far from hesitating to proclaim personal intimacy with, and attachment to such men, we are proud to have yet command of a record to note here again, what is so well corroborated by the pages of the first work ever dedicated in our country exclusively to the advancement of all that can give dignity if not profit to rural life and its pursuits—and to which no class of men contributed more or more freely than did then the officers of the Navy, in answer to the earnest call, in the old *American Farmer*, of their humble associate and friend the present Editor of the *Plough, the Loom, and the Anvil.*

We venture to identify this importation of Mr. Colt's with the Tuscany cattle brought by Commodore Bainbridge, from their sameness in color and general appearance, and will close this hasty sketch of the breed illustrated by the portrait of Kossuth, by the following extract from an old letter as far back as 1822, from that gallant and true-bred son of the "old blue hen," Commodore Jacob Jones of Delaware, whose intimacy and friendship it was our privilege to enjoy for the third of a century. He too was fond of Agriculture, and found in it a congenial theme for ready and agreeable conversation, having paid attention in various countries to the animals and implements employed in its operations.

His whole correspondence on these subjects would interest all intelligent readers, and especially those who knew the man, as it would display on the face of it many veins indicative of the philosophical turn of mind and spirit of research characteristic of the writer; but want of space restricts us to what he says about the effect of a cross of the blood of the Hungarian on the Spanish cattle, going to confirm our own persuasion, that this importation by Mr. Colt may prove one of great importance in all States where farmers possess, or may acquire, the sagacity to see how much is to be saved by the substitution of ox for horse power in the ordinary operations of husbandry.

Extract of a letter from Commodore Jacob Jones to J. S. Skinner, dated Gibraltar, 16th September, 1822.

The cattle that I have seen in Spain appear to be nothing superior to ours, nor have I seen any where on the coasts of the Mediterranean any thing that appears to be better than those in America, except a race of white cattle at Naples used for the draught. I was informed by a gentleman who, in supplying the government with timber, used thirty yoke of them for two years, that during that time they had constantly travelled from twenty to twenty-five miles a day;* the place from whence he drew the timber being from forty to fifty miles distant from Naples. He said they were the offspring of the Spanish bull and the *Hungarian* cow, or of the *Hungarian* bull and the Spanish cow. They are generally fifteen hands high, their bodies long, thin and deep, legs long, and small light head; a sharp muzzle resembling the deer; color entirely white, except a black nose, ears, and tuft of the tail.

Commodore Jones confirms in this letter, on the authority of Mr. Ladio, American Consul, and a practical agriculturist, the account received in Spain by Mr. Hambleton, that their best mules were the offspring between the horse and the jennett.

The reader will remember that Mr. H., in his letter republished in our last, speaks highly of the "*Tuscany cattle*," which he identifies with a breed of cattle on the eastern shore of Maryland, called "Bordley's breed." If we do not mistake, it is the race of cattle mentioned in Bordley's Husbandry as the *Tin-Yan* breed. They too, like those spoken of by Commodore Jones, were white, with black, but more frequently (and the more esteemed for it) *red* muzzle and *red* ears. From childhood they struck us as the latest and perhaps degenerate fruits of some old importation of extraordinary and valuable properties. We have seen calves of the breed frequently on the fine estate of John C. Weems, on West River, and often thought, were we farming, we would pick up some, apparently the deepest in the blood, with silky coat, *yellow* skin and *red* ears, and endeavor to breed back, and re-establish the origi-

* The Conestoga wagon-horses of Pennsylvania travel on the National Road from fourteen to sixteen miles a day.—*Ed. P., L. and A.*

nal imported stock, let that have been what it may. It was undoubtedly a family of aristocratic blood. The late WILLIAM GIBSON, of Baltimore, (for ever respected be his name for his spotless integrity and his love of Agriculture,) took one of his prizes at the Maryland Cattle Show for the best milch cow, with a noble animal of that breed—white, with silky coat, yellow skin, and red ears and muzzle; inheriting probably, however remotely, a lingering trace of the *Hungarian blood!*

It may be useful as an item of practical information to state, that Mr. Colt's imported Alderneys cost $160 without freight; his Ayrshires $190 with freight. He "is satisfied the Hungarian cattle will be valuable for beef and for the yoke, but not so satisfied about their milking qualities. In truth," he adds, "there is nothing like a pure Alderney for one that keeps but a single cow, and wants quality, not quantity. I do think, however, that my breed of Alderneys will yield at least 7 quarts a day for 335 days in the year; in fact you may milk them from calving to calving, but this is wrong—it does harm to the calf. I have crossed my pure Ayrshire imported cows by my fine pure-blooded Alderney bull, and my farmer says, with decided advantage in the increase of the milk, which is but little inferior in quality to the pure Alderneys. Of this I am entirely satisfied, that my calves of the Alderney and Ayrshire breed are equal to, nay, I think superior to my imported stock."

HOW PROTECTION BENEFITS THE PRODUCERS OF WOOL AND THE CONSUMERS OF WOOLLENS.

THIS is so well shown in the following article from the *New-York Dry Goods Reporter*, that we are induced to transfer it to our pages, and recommend it to the careful perusal of the grower of wool and the consumer of woollens, believing that both will find in it evidence that the true and only mode of reaching perfect Free Trade is by the establishment of adequate and perfect protection to the Farmers and Planters in their efforts to draw the Loom and the Anvil to the side of the Plough and the Harrow:—

It would be an interesting subject to inquire how protection to American industry has operated upon the consumers of this one article alone, [shawls,] but time and space forbid us to give more than a cursory glance. We will, however, state that previous to 1848, all the Woollen Shawls used in the United States were imported from Europe; the price of a fair article was $12 in first hands, $13 *a* $13 50 from jobbers, and $14 *a* $15 from retailers. The Bay State Mills were started, and it being a new business, the first year they could not afford shawls at less than the price of the imported article, but during the second year they had gained experience, and produced them at a cheaper rate. The price was reduced to $10; and experience having given them the ability to produce cheaper each year, the article has been reduced in price till now the same shawls are offered to the consumer at $8 each from retailers' hands. The successful introduction of this branch of manufacture induced others to embark in the same line, and as the foreign manufacturer was obliged to meet the market, the result already has been a saving to the consumer of 7-16 in the cost.

We are also gratified to state that this particular branch of manufacture has afforded a fair return to the mill-owners. We think we can with safety say the present production in the United States is quite 600,000, which, at an average of $5 each, amounts to $3,000,000, consuming at least 3,000,000 lbs. of *American Wool*, (when it can be had,) saving *us the export of near* $2,000,000 *specie to pay the balance of trade.* Is not this encouraging to the Wool-grower?

"EVERY LITTLE MAKES A MUCKLE," AS POOR RICHARD SAYS.

It is really wonderful to think, when we reflect on it, how large a portion of the produce of the farm is wasted in a country where, for want of due encouragement to manufactures, the consumer is widely separated from the producer.

The first waste committed is in clearing his land, and consuming *with fire* the *timber* that he could sell for money were the Manufacturer close at hand. From that, the *waste* extends to every thing; so that the offal, or "fifth quarter," lost to the isolated producer in the country, is worth more than the carcass when the consumer comes and settles close down by his side. Look at this story of the pig, (which we take from some paper of the day,) read and laughed at as a piece of badinage, yet full of suggestive thought and instruction to men who have learned to think. These men of Cincinnati would for the country Farmer take all the labor of slaughtering his hogs off his hands, and give him back all he gets out of them now, they being content with what the Farmer in the country now throws away! And again: The loss he incurs in the country by exposing his hogs in open pens to rain and snow, and mud and mire—the additional quantity of food which that system makes necessary, and the manure that is lost for want of proper compounding and management, are equal to *another fifth quarter;* so that where all are Farmers alike, with no conveniences for *using up the pig*, even to his bristles, hair, and blood, they may be said to lose one half. But then did not God made us Agriculturists to draw wood and water for the Manufacturers of England? Let us, then, continue to pay her with hand-made products what she manufactures for us by machine power, in the use of which one half-starved laborer can do one hundred times the work of a well-fed American freeman! For this, there is no alternative, unless we can *reduce our labor to the same level.* Ah, the glory, the incomprehensible glory of "Free Trade"!!!

THE PIG IN CINCINNATI.

What crocodiles were in Egypt, what cows are in Bengal, or storks in Holland pigs are in Cincinnati, with this trifling difference—their sacredness of character lasts but as long as their mortal coil; and this is abbreviated without ceremony, and from the most worldly motives. In life the pig is free—is honored: he ranges the streets; he reposes in thoroughfares; he walks between your horse's legs, or your own; he is every where respected; but let the thread of his existence be severed, and, shade of Mahomet! what a change! They think, in Cincinnati, of nothing but making the most of him. How many of this kind perish annually, to cement the vast prosperity of that city, cannot be told. About fifteen years ago, when it contained only one-fifth of its existing population, a few bold speculators began the trade. Selecting the hams and sides of the animal, they made pickled pork; of the rest they took small account. Soon, however, the idea occurred to one more acute than his fellow, that the heads and the feet—nay, even the spine and the vertebræ—might be turned to account. Trotters and cheeks had their partisans, and these parts looked up in the market. About this time the makers of sausages caught the inspiration; they found those luxuries saleable; and so many pigs were to be slaughtered, that the butchers were willing to do it for nothing; that is to say, for the perquisite of the entrails and offal alone. The next step was due to the genius of France. A Frenchman established a brush manufactory, and created a market for the bristles; but his ingenuity was outdone by one of his countrymen, who soon after arrived. This man was determined, it seems, to share the spoil; and, thinking nothing else left, collected the fine hair or wool, washed, dried, and curled it, and stuffed mattresses with it. But he was mistaken in thinking nothing else left. As but

little was done with the lard, they invented machines and squeezed oil out of it; the refuse they threw away. Mistaken men again! This refuse was the substance of stearine candles, and made a fortune to the discoverer of that secret. Lastly came one who could press chemistry into the service of mammon. He saw the blood of countless swine flowing through the gutters of the city; it was all that was of them, but it went to his heart to see it thrown away. He pondered long; and then, collecting the stream into reservoirs, made prussiate of potash from it by the ton. The pig was used up.

AN IMPORTANT DISCOVERY FOR AGRICULTURE.

It will bear to be repeated—what was said in our February number: "We traverse sea and land, and send to Africa and to South America, to bring home elements of fertility which at home we throw away."

In the *Boston Traveller* of last December, it was announced to "*The Society of Natural History*," that a valuable and extensive deposit of *mineral phosphate*, usually called phosphorite, had been discovered in the town of Hurdsville, Morris county, New-Jersey, by Doctor C. T. Jackson and Mr. Alger, while on an excursion into that State during the past summer.

The bed of mineral belongs, we understand, to Mr. Alger, who is taking measures to have it ground and properly prepared for application to American agriculture, in the history of which this accident may prove an incident to be remembered; and therefore we take pleasure in recording it. In England, where the various ingredients for restoring impoverished soils are, for obvious reasons, so much more eagerly sought, there is a great demand for this substance; and it happens in this case, as it did in the case of Peruvian Guano, of which we ourselves distributed two barrels twenty-six years ago in Maryland, and told the whole story of its composition and uses—it happens again, we say, in this case as in that, that several tons of this valuable deposit in New-Jersey have been *sent to England* upon trial as a cheap and practicable substitute for bones and guano. Intelligent farmers of that country allow nothing to be lost. They collect the fossil bones on account of the phosphate of lime contained in them; and even coprolites are employed when they contain only ten per cent. of phosphates. The best of the English phosphates, which are at present dug up in large quantities on the coast of Suffolk, afford only 60 per cent. of phosphate, the rest being carbonate of lime and earthy matter. The Peruvian Guano contains only about half its weight in phosphates, while the New-Jersey mineral, according to an analysis just made by Doctor Jackson, (than whom there can be no higher authority,) has 92 per cent. of it, besides about 7 per cent. of fluoride of calcium, valuable as the source of the fluoride contained in the teeth of animals.

So important is this substance deemed, says the *Boston Traveller*, that "a few years since the British Government sent commissioners to Estremadura in Spain, for the purpose of exporting it to England, and Professor Daubeny made a report on the subject, the result of which was that it did not occur in sufficient quantities; so that the only mineral phosphate now used by the agriculturists in England is obtained from the *crag* on the coast of Suffolk. But this is very impure," from admixture with carbonate of lime and infiltrated mineral matter, "while the mineral phosphate of New-Jersey is perfectly pure. Prepared bone dust, however, is very largely used in England, and in this country the demand for

it is considerable. This prepared bone contains several soluble phosphates besides lime, as magnesia and soda, all of which are important to the growth of plants. When we consider the bearing of phosphate of lime upon the animal and vegetable economy, and that our own bones and teeth are so largely composed of it and *derive it, as they only can*, from the vegetable kingdom, we see how important it is that the soil which is to afford us our food should be supplied with it as it is taken up by the growing plants. Farms often become valueless from the failing supply of phosphates, the crops fail, and the cattle raised upon them are of a less hardy class. The ashes of wheat, rye, corn, beans, turnips and potatoes, contains from 50 to 80 per cent. of various phosphates."

It is deemed proper here to add, in a spirit of watchfulness for every thing which it may benefit American Agriculturists to know, that we have just been reading a recent and elaborate PRIZE ESSAY on "THE FARMING OF SOMERSETSHIRE," England. These essays on the farming of various counties are truly magnificent papers in their way, generally accompanied with beautiful geological surveys, though many of them may contain matters not exactly applicable to our country.

In the one before us the author, as to *guano*, says :—

The better cultivation of root-crops has been much promoted by Mr. Michell's example and readiness to explain to his neighbors the reasons and to show the results of his practice. The gradual course of improvement, and the best mode of management to be now adopted, cannot be better told than in Mr. Michell's words :—

"Guano was for some years extensively used and with great success, so far as the turnip was concerned; but a more extended experience has convinced most farmers that their subsequent crops are not improved as they should be by the use of this manure; in fact, that the land appears to be impoverished rather than enriched after the growth of a good crop of turnips with guano, though they may be eaten off the ground; guano has consequently fallen greatly into disuse, and has given way to the less expensive and far more efficient dressing with superphosphate, of lime. This is generally manufactured by the farmer himself by dissolving crushed bones in about one third of their weight of sulphuric acid. This is used at the rate of from 2 to 4 bushels of bones per acre, carefully mixed with about ten bags of peat or wood ashes. The cost per acre—3 bushels of bones at 3s. per bushel, including carriage; 40 lbs. of acid, 1½d. per lb., and ten bags of ashes at 7d.: the whole 19s. 6d. per acre. With this such crops of turnips are now grown in the hill district as would quite astonish the farmer of a quarter of a century ago. And when we consider the little labor required in carting this manure on the farm and depositing it on the land, it must be acknowledged to be the cheapest as well as the best of all dressing for the turnip. It appears too to be exceedingly well adapted to the climate and soil, so that any breadth may now be grown at a reasonable cost."

On this very subject we find that at a late meeting of the Weekly Council of the Royal Society in England :—

The President made an interesting statement to the meeting on the subject of native phosphate of lime, and the probability of its occurrence among the metamorphic masses in this country. His Grace had been in communication with Sir Roderick Murchison and Professor Daubeny on this subject, which might prove one of great importance to the practical farmers of the United Kingdom, should the mineral phosphorite, containing as it did so large an amount of bone-earth, be either obtained from abroad at a moderate cost, or be found occurring in our own Islands. The council, at the suggestion of the President, directed the secretary to make such inquiries for the information of the members, in reference to this mineral, as might lead to farther researches for the discovery of its occurrence.

☞ It appears by a list of the average price of wheat in England and Wales for the last fifty years, it was never so low as during the last year, when the average was 40s. 4d., except the single year of 1835, when it

fell to 1s. per quarter below that; neither has flour *ever* been as low for forty years in Paris as during the last. What a beautiful system is this free trade in corn, so rapturously hailed by American free-traders!—a system that ruins the English farmer, and compels the American farmer to cheaper labor, or to live on *pumpernicle*—hard rye bread, like the Russian serf, against whom he is told he must learn to contend in the great grain markets of the world. Let us then call it the *pumpernicle policy!*

FLAX COTTON.

So much has been said lately in English and American papers, about a new process for preparing flax, achieving at once much saving of labor, and adapting that material to take the place of cotton, that we have deemed it best, notwithstanding the space it occupies, to place before the reader a full exposition of its claims, made by the inventor himself, before the Royal Agricultural Society of England.

Although we have strong doubts as to the efficacy of this process to accomplish the purposes in view, yet the commercial and statistical facts which are here presented, in their bearing on a great branch of Agriculture, are sufficient in our judgment to warrant, in the eyes of all enlightened readers, the space which we have yielded to them in this number; while the great sensibility evinced on the subject, both in this country and in Europe, shows how eagerly the public mind is turned to it, as a field open to improvements in agricultural machinery, calculated to have immense influence on the Industrial Interests of the world.

We feel bound to improve the occasion to warn our friends, cotton planters in the South, how impatient are English monopolists of their dependence on the great staple of the South—and how much it behooves them to provide beforehand, in our own market, a safe retreat from the storm that has been so long brewing.

Let them favor the restoration of the policy that tends to bring the spindle and the loom to their own cotton—that policy which increased the home market in five years from 260,000 to more than 600,000 bales; and they will soon render themselves independent of British merchants and manufacturers; who rejoice in every invention that tends to render them independent of the cotton-growers of the world, and find therein double cause of rejoicing, because they believe it must result in the destruction of the value of slave labor. Let them, on the contrary, continue to support the policy that drives all the cotton machinery of the world to the flax-growing regions of the world—that policy under which the domestic consumption of cotton diminishes from day to day—and they must become daily more and more dependent upon Manchester brokers and Manchester spinners; and then, when the day arrives—as there is danger it will too soon—when flax grown in England, Ireland, France, Germany, Poland, and Russia can be substituted for cotton in all the mills throughout Europe, they will bitterly regret a course of policy the whole effect of which has been, and is, that of ruining their friends, and strengthening their enemies. Pennsylvania stands by the South, and by the Union; and she is being ruined by the South. Manchester seeks to destroy the South, and the *South furnishes her the capital with which to accomplish her*

object! How long before the people of this Union, rising above party prejudice, will with one voice say with Mr. Jefferson—It is time for us "to place the manufacturer by the side of the Agriculturist?"

Royal Agricultural Society of England.

At the Weekly Council of the Society, held on Wednesday, Feb. 12th, Mr. M'Dermott read the following paper:—

REASONS IN FAVOR OF AN EXTENDED CULTIVATION OF FLAX AND HEMP IN THE UNITED KINGDOM.

My object, gentlemen, in reading the present paper, at the request of your esteemed Chairman, is to submit to you, and through you, to the great agricultural body of England, a few facts bearing on the importance and advantage which, in a national and individual point of view, would result from a more extensive cultivation of fibrous plants in this country. In venturing humbly to submit these facts and opinions to so important and influential a body of gentlemen as those who compose the Council of the Royal Agricultural Society, I am far from wishing it to be understood either that I conceive them to be ignorant of many of the facts which I shall have occasion to adduce, or that the subject of flax culture is one to which they have not already paid some considerable attention. On the contrary, many of the valuable reports of your Society, and the prizes given for Essays on the subject, prove that it has at various times engrossed your consideration, and formed the theme of serious deliberation at your Councils. Markets comparatively undeveloped, ignorance of the true character and structure of the plant, prevalance of modes of cultivation and preparation of the fibre, wasteful and injurious in themselves, and attended with an enormous amount of risk and trouble to the grower, have hitherto each had their weight in inducing your Society to withhold its valuable recommendation in favor of an extension of flax culture.

The progress of science, and the skill and enterprise displayed by many of the agriculturists of England and of Ireland, have, however, now placed the matter upon a perfectly different footing, and upon one which I venture to submit should induce the Royal Agricultural Society, in the most strenuous manner, to urge upon the farmers of the United Kingdom the propriety of immediately devoting some portion of their land to the cultivation of flax.

Climate and Soil of England suited to its Growth.—That flax *can* be produced in this country is a point upon which I apprehend little doubt now exists; and it is unnecessary for me, especially before such a body as that which I have now the honor of addressing, to argue such a question. Suffice it, therefore, upon this point, to say, that in many respects our climate is better adapted for its growth than even Belgium, inasmuch as we are not subject to those severe droughts which, occurring in the spring, in that country, frequently inflict very serious damage upon the young crop. Flax is grown, to some extent, in almost every part of the United Kingdom—it has been grown with success upon an Irish bog, and in the fen districts of England—on the summit of the Wicklow mountains, and upon the Beaconhill of Norfolk, in the midland counties of England and the western shores of Galway and Mayo, upon rich and poor, clayey, gravelly, alluvial, and every variety of soil.

Importance attached to Growth of Flax by Governments.—This suitability of our climate and soil to the production of flax, and the importance which in earlier times was attached to it, is sufficiently evidenced by the numerous legislative measures which at various times, from the reign of Henry VIII. to that of George III., have been passed in order to promote and encourage its growth. The "Transactions of the Board of Agriculture" for 1742, contain a letter, written by Robert Somerville, Esq., of the East Lothians, in which the writer regrets, notwithstanding these encouragements and the bounties offered by the liberality of the Government, that the cultivation of flax should then have been so extremely limited, and the management in every stage, both of its culture and manufacture, so very defective.

"This," he says, "is the more to be regretted, as there can be little doubt that immense quantities might be raised in Britain with little labor, and that, too, upon soils where hardly any thing else will grow. The accomplishment of an object so

truly desirable as that of the extended cultivation of flax, would be attended with the most salutary effects, by affording employment for an increased population, and materially lessening *our dependence upon foreign countries.*"

But if, upwards of a century since, great importance was attached to this subject, on the ground of *increased population and dependence on foreign countries*, of how much greater importance and advantage ought it not to be considered at a time when our population is more than doubled, and our *consumption of cattle food*, formed from flax seed, and of raw material for our manufactures, has increased to an extent which, a *century* since, would have been considered fabulous and incredible; and at a time, too, when our railways and improved means of transit give such increased facilities to the grower for the disposal of his produce.

Markets.—In urging upon the agriculturists of England the propriety of an extended cultivation of flax, I am anxious first to show them the enormous extent of the *existing markets* for their produce, which is now almost exclusively engrossed by the foreign producer; and the vast demand which is now opening up, in consequence of the recent discovery by which flax may be employed in our silk, woollen, and cotton manufactures; and which, if not speedily secured by our home producer, must, in like manner, be supplied by the foreign grower. The markets which at *present* exist for flax are twofold in their character—agricultural and manufacturing. Under the former are comprised those large quantities of oil-cake and of flax seed for sowing and crushing purposes, which are annually consumed in this country.

Oil-cake.—Upwards of 70,000 tons of oil-cake are annually imported, the value of which exceeds £500,000, the whole of which might be produced by our agriculturists with the most perfect ease, and with profit and advantage to themselves. In connection with our supply of foreign oil-cake, it is worthy of remark, that by far the larger proportions are sent from those countries which are the largest exporters of cattle to this country. By the almost total neglect of the cultivation of flax our farmers are thus placed in the anomalous position of *dependence upon those countries* for the supply of food for their cattle, which compete with them in our markets, and in several instances we are actually compelled, in addition to the price set upon the cake, to pay a considerable duty imposed by the Government of the exporting countries.

Flax-seed for Crushing.—From *Russia* we import annually half a million of quarters of flax-seed, the value of which is upwards of a million sterling. Our total imports of flax-seed for sowing and crushing, from all countries, in round numbers, are about 650,000 quarters, the value of which, at the low price of 7*s.* per bushel, is £1,820,000. There is no reason whatever why this large sum might not be annually saved to the pockets of our agriculturists, nor why the makers of linseed oil should not be supplied exclusively with home-grown seed for the purposes of their manufacture. The cultivation of flax at home, *if only for the seed*, would render our oil-pressers independent for their supply upon foreign countries, and would give to our agriculturists a return of upwards of £2,000,000 annually. It would also give them an article more valuable for cattle-food than the oil-cake purchased from foreign countries, and which consists of the mere refuse and husks which remain after the expression of the oleaginous properties from the seed; or if it should be preferred by some still to use cake, the seed could be sold to the "oil-presser," and the grower might fatten his cattle upon cake produced from home-grown instead of from foreign linseed.

Sowing Seed.—With an increased cultivation of flax at home, we should also be spared the dependence upon foreign countries for our supply of seed for sowing purposes, and which we now import to the value of some £200,000 per annum; for it is absurd to suppose that flax can only be grown in this country from foreign seed; the reason for this opinion being no doubt traceable to the prevalent mode of pulling the flax before fully ripe.

Manufactures.—Passing on, however, from the agricultural demand which exists for the production of the crop in the shape of *seed*, I will now call your attention to the existing market and the sources of supply for the *fibre* of the plant required in our manufactures. It cannot fail to be a matter of deep regret to every well-wisher of his country, that in the two main branches of our textile manufactures we are so completely dependent for the supply of the raw material upon foreign countries. Our cotton manufactures absorb *daily one thousand tons* of cotton wool, the produce of foreign countries alone. For our supply of cotton, we must, no doubt, still continue to be dependent upon foreign countries, inasmuch as the material cannot be produced *at home;* but there is every reason to believe that by the adaptation of flax to cotton machinery this extent of dependence will in future be consider-

ably less than it has hitherto been, provided our agriculturists will but come forward in earnest, and endeavor to supply the new demand for their produce thus created. Our linen and other manufactures in which flax is employed are all but completely dependent upon foreign countries for their supply; and of the 100,000 tons now annually consumed, not more than one-fourth is produced in this country. The total value of the flax fibre imported for manufacturing into linen, sail cloths, tarpaulings, rick covers, sacking, and other materials, exceeds £5,000,000 annually; and there is no doubt, judging from the rapid progress of our linen manufactures, that if the supply of the raw material could be more readily obtained at home, the consumption would be increased to a still greater extent. The progress of the linen trade, in consequence of the great improvements which have been made in machinery, has within the last 20 years been almost unparalleled. The exports of linen have increased since that time from 50,000,000 to 105,000,000 of yards, and its declared value from £1,700,000 to upwards of £3,000,000. No attempt whatever has been made on the part of our agriculturists to meet this enormous and rapid increase in the demand for the raw material; and as a consequence, the foreign producer has been reaping a golden harvest from the monopoly which he has possessed. The imports of foreign flax have increased from 936,000 cwts. in 1831 to 1,800,000 cwts. in 1842. The value of the *increased* imports being not less than *two millions and ahalf*, nearly the whole of which is paid for in money sent out of the country.

Hemp.—We also import large quantities of hemp, which might, like flax, be easily and profitably grown at home. The value of the hemp annually imported is above £1,500,000. We have thus a demand existing for flax and hemp, and for the supply of which we are dependent upon foreign countries, shown in round numbers by the following figures:—

Flax fibre	£5,000,000
Seed for crushing	1,800,000
——— sowing	200,000
——— Oil-cake	600,000
——— Hemp	1,500,000
	£9,100,000

New Markets.—Hitherto I have spoken only of the *existing markets:* I am now anxious to call your attention to that great demand which will be opened up by my discovery of the mode of adapting flax to cotton and woollen machinery. The substitution of flax for cotton is now no longer a matter of doubt. Recent experiments at Rochdale have completely set that question at rest. Important as may be the considerations connected at present with the linen manufactures, and cogent as may be the arguments deduced from them, in order to induce you to obtain possession of the ground now occupied by the foreign producer—infinitely more important, and far more forcible, are those which may be drawn from the prospective demand now springing up in our cotton manufactures. The consumption of the raw material must of necessity be governed by the machinery which exists for its manufacture, and the spindles of Belfast, of Dundee, and of Leeds, are already supplied with the produce of foreign countries. Not so, however, with respect to flax and its adaptation to the cotton manufactures. Millions of cotton spindles are ready at once to take to the new material and spin it for you, without the slightest alteration being required in their arrangement. A thousand tons of cotton daily, or 770,000,000 of lbs. annually, are consumed in our cotton manufactures, and the result of my recent experiments has been such as to show that flax may be substituted for one half at least of this amount. In order, therefore, to supply the *new demand* for a *new material* thus created, the produce of 2,000 acres will be required for each day, and the whole of the flax grown in the United Kingdom does not amount to more than one seventh of the supply required for Manchester alone. It is a duty imperative upon the agriculturists of the country to endeavor to meet this enormous demand, and not to allow it to pass into the hands of foreign countries, which will inevitably be the case if they do not immediately exert themselves in this respect.

Wool.—But not Manchester alone, but the woollen districts of England, await with anxiety an increased supply of flax which shall be available for the purpose of spinning in combination with wool, upon the existing wool machinery. I will not trouble you with statistics upon the subject of our woollen manufactures. The population of Leeds, Bradford, and other towns in the woollen districts, are kept in

a state of prosperity by the employment which it affords; and the introduction of flax into that particular branch of our manufactures would have the effect of reducing the price of the material by 25 per cent., and of giving an increased amount of employment in those districts. A firm in Bradford has already taken steps to carry on the manufacture, and will alone require the produce of 5,000 acres in the ensuing year.

Deficient Supply of Cotton.—In connection with the supply of the markets already referred to, a further argument is to be found in the effect of the present diminished supply of the raw material from foreign countries. "There is," says Mr. Porter, in his remarks on the statistics of the cotton trade, in a paper read before the British Association last year, "a growing opinion that now, and for some years past, we have reached the maximum supply of cotton from the United States—a fact which, should it prove to be correct, makes it a matter of absolute necessity either to seek for further supplies of the article from other sources, or to find some efficient substitute that shall provide the means of employment for our continually growing numbers." So great has been the deficiency of cotton in the United States during the past year, that the prices have risen cent. per cent. as compared with those of 1849, and our manufacturers are straining every nerve to endeavor to obtain an additional supply of cotton, and to reduce their dependence upon the United States for the supply of their staple article. The Manchester Chamber of Commerce, feeling the importance of the subject, have, at considerable expense, sent a gentleman to India for the purpose of obtaining information as to the probable extent to which they might depend upon that country for an increased supply of cotton. But to realize this much desired benefit, there must be introduced into India a totally new system of managing this crop, and new and convenient modes of transit for bringing the produce of the interior down to the coast for shipment. Those acquainted with the habits and prejudices of the people of that country need hardly to be told with what difficulty such a change would be brought about, and how many years must elapse before the establishment of railways, or the formation of roads for the conveyance of the material produced under such an altered system. So far, then, as the arguments for an extended growth of flax in this country, founded upon the present position of our cotton manufactures, are concerned, our agriculturists have to consider the diminished supply and increased price of cotton; the difficulty of obtaining the requisite supplies from other countries; and, above all, the fact that flax can be advantageously employed as a substitute in those manufactures in which cotton is required.

Deficiency of Flax.—If again we turn to the position of our linen manufactures, it will be found that there exists in that branch also a most extraordinary deficiency in the supply of the raw material. In Ireland the cultivation of flax has fallen off during the past year, as compared with 1845, by nearly 60,000 acres. In Russia, from whence we derive our largest supplies, there has been a decrease in the amount of exports of flax of nearly 150,000 "poods," or about twenty per cent.; and I find in the *Morning Chronicle*, which has devoted much attention to the subject of an extension of the growth of flax, a circular of one of the largest houses in St. Petersburg, in which the following statement occurs:—

"We are to have a small supply of flax next season, *not above one half* of that which we had two years ago, and such high prices are consequently paying in the interior, that the dealers will not be able to lay it down here, to cost less aboard than it is now selling for on your side; so that we are not likely to have any thing doing on contract for a long time, if at all this winter, unless the relative state of the two markets experience mutual alteration by an improvement on your side."

In Belgium, where the finest qualities of flax are produced, the cultivation of flax is considerably less than on the average of former years.

It is under these circumstances, with an increasing demand on the part of the manufacturers, and a diminished supply on the part of the foreign producer, that I venture to submit to the British agriculturist the taking some steps calculated to meet the existing state of things, to diminish our dependence upon foreign countries, and by so doing confer lasting benefits both upon himself and upon his country. There is a happy conjuncture with this state of things and the time at which the present demand arises. Formerly, when our laws imposed restrictions upon the importation of grain for human food, our agriculturists might have conceived that there existed some kind of moral impediment in the way of increasing our home growth of articles for any purpose not of equal primary necessity. That impediment, whether rightly or wrongly I pronounce no opinion, has, however, passed away, and

there is now no reason whatever why their fields should not henceforth be used for the production of any article that promises an adequate profit to the grower.

"It is," says Mr. Porter, of the Board of Trade, "especially desirable so to apply the productive power of the soil for the supply of articles *as indispensable* to the support of millions of our people as corn itself; and an *additional inducement* to the growth of flax, beyond that offered by other articles, may be found in the fact that, to bring it to the same condition as that in which it is imported from foreign countries, calls for the employment of a considerable amount of human labor."

Objections to Growth of Flax: Agriculture.—But, if satisfied that ample markets exist for the sale of his produce, and that this sort of moral impediment to its growth has been removed, the agriculturist may still point to the objections entertained against the growth of flax, both on account of its supposed exhaustive character, and the trouble, risk, and expense attendant upon its preparation for markets, as reasons why he should not enter upon the cultivation of the plant. With respect to the exhaustive character of the plant, and its consequent injurious effects upon the soil, there appears to be no reason for supposing that, under a proper and judicious mode of treatment, it is more exhaustive or injurious than any other seed-producing crop. An examination of the stem of the plant shows that those portions of it which are required for the purpose of manufacture, are derived almost exclusively from the atmosphere. Indeed, to so small an extent do the inorganic properties of the soil enter into the fibre, that it has been found upon analysis that 100 lbs. does not contain upon an average more than 2 lbs. of mineral matters, including lime, magnesia, oxide of iron, carbonic, phosphoric, sulphuric acid, and silica. It is the woody parts of the plant, the resinous matter of the seed, with its capsules and husks, which absorb from the soil the phosphoric acid and other fertilizing ingredients. If the flax, unlike other crops, be not allowed to return any thing to the soil; if the seed be thrown into the steep pit or "rettery" with the stem of the plant, and there destroyed; if instead of being employed as food for cattle, the straw or woody parts be rendered perfectly useless for all the purposes of manure, or mixing with cattle food, then undoubtedly flax, like every other crop, would be *in itself* an exhausting crop. But practical experience, however, has fully proved that under a judicious mode of treatment, so far from being an exhaustive, flax is actually a renovating crop. Numerous instances might be cited upon this subject. Mr. Edmonds, of Stonehouse, near Plymouth, stated, in 1843, "It is a mistaken opinion that hemp and flax impoverish the land; from *long experience* I have found the contrary; these are crops that make a *greater return as to manure than any corn crop.*"

Sir Richard O'Donnell, who is one of the largest cultivators of flax in Ireland, and who has grown to the extent of 700 acres in one year, states in the *Morning Chronicle*, "As the result of many years' experience, that when grown in its regular rotation, flax is so far from being exhaustive, that it tends greatly to improve the soil and the character of the other crops in the rotation. It is above all most valuable for laying down land after wheat or oats, as the process of pulling the flax, by loosening the earth around the roots, improves greatly the quality of the grass crop."

Mr. Warnes, whose exertions as a practical agriculturist, to promote the extension of flax culture, are deserving of all praise, and whose system of agriculture rests upon the growth of flax, and the fattening of cattle in boxes, upon the seed, incorporated with other produce of the farm, both summer and winter, has introduced the flax plant into every rotation upon his farm; and, judging from the results of his own experience, he states that no rational assertion can now be urged against the growth of flax, as the improved systems of cultivation and preparation have rendered obsolete the clauses in old leases, prohibiting the culture of the plant, and the antiquated notion that fibre and seed cannot be secured at the same time. So far, therefore, as the exhaustive character of the plant is concerned, there appears to be no sufficient ground for entertaining such an opinion.

Preparation for Market.—A further objection to the growth of flax, is, however, to be found in the nature of the process hitherto required to be employed previous to its preparation for the market. So long as it shall continue to be considered necessary for the grower to embark in the present troublesome and uncertain process of steeping the flax in the straw, it will be in vain to expect any very general or extensive growth of the plant. Although considerable advance has no doubt been made in the preparation of the fibre during the last few years, still the present mode is far from being suitable to the great body of the farmers of the United Kingdom.

Dew Rotting.—Under the system of preparing the flax, hitherto four modes of steeping or rotting the plant are resorted to. The first consists of the plan of "dew rotting," or allowing the flax to remain exposed on grass land for a considerable number of days, exposed to the action of the rain, dews, and atmosphere. The plan, however, is one which, from its obvious inconveniences, is not calculated to meet with general approval in the present advanced state of agriculture, and is indeed very rarely adopted.

Steeping in Streams.—Probably the best mode of steeping the flax is that of placing it in running streams, according to the mode adopted in Courtrai, the principal flax-producing district of Belgium. The flax so prepared generally realizes a much higher price than any other description of flax. There are, however, certain peculiarities in the water of the river Lys which make it admirably adapted for steeping purposes, and which are not possessed by any other streams in this country. Independent of the peculiarities of the water, the steeping of flax in running streams cannot be made generably available in this country, as they are mostly too rapid in their character.

Steeping in Pits.—In the absence of suitable streams, recourse is had to a mode of steeping in pits or pools sunk in the ground. But so many favorable conditions are required to be obtained, and so many unfavorable ones to be avoided, in the selection of the site for the pool, and the supply of the water required, that it is probable that a desirable or perfect steep-pool could not be found in any part of the country. The soil forming the bottom and sides of the pit will have an influence on the color of the fibre; clay, gravel, alluvial and peaty soil, will each impart some peculiar dye to the material, which more or less affects its value. The water used in the pit or pool must not be spring water, and it must not have flowed over any soil containing metallic deposits; and rain water is not well calculated for the purpose. But, in addition to all these difficulties attendant upon obtaining the requisite means, the grower of flax has to contend against all the uncertainties and risks of either over or under-steeping his flax. "One sultry night," says one of the reports of the Royal Flax Society, "while it is in the steep, and nearly rotted sufficiently, is enough to carry the fermentation beyond the safe point. So much is this feared by farmers, that almost all flax is underwatered; and although much of it is afterwards mannered on the grass, yet the great proportion is brought to market with the shores still unseparated in bits on the fibres." But while the sultry nights of summer are unfavorable to the steeping of flax, and inconvenient to the farmer, inasmuch as his laborers are at that season generally otherwise employed, it is also obvious that during the winter, when comparatively little farm labor is carried on, the process of steeping must be discontinued altogether, in consequence of the temperature.

Schenck System.—A fourth process has, within the last few years, been very strenuously advocated by the Royal Flax Society in Ireland, which consists in steeping the flax in hot water. This mode, although doubtless an improvement upon any of the existing plans, still does not afford the means of obtaining that complete separation of the fibres which it is desirable to obtain. The Belfast Society do not pretend that this is a mode generally applicable to the use of the producer of flax, for under what they term a "division of labor" they propose that the whole process of preparation, with the profits attendant upon it, and the additional labor required, shall be taken out of the hands of the growers, whom it designates as "a class of persons ignorant of the commonest chemical principles," and handed over to capitalists or speculators who would erect the required machinery in districts where the growth of a certain quantity of flax would be previously guaranteed. According to the reports of the Society, it appears that the profits upon the preparation of an Irish acre of flax would be something like 200 per cent. upon the amount paid to the grower for his produce. The farmer is paid for his flax a price ranging from £5 to £8 per acre; the steeper, upon this principle of "division of labor," receiving a net profit (I take the figures of the advocates of the plan) of upwards of £20.

With such *inducements* as these offered by the Flax Society, I doubt much whether the agriculturists of this country will feel very much disposed to enter upon the growth of flax to the extent which the circumstances of the case require; and in Ireland I have no doubt but that the whole scheme, fraught with so many of the abuses of the middlemen system, will soon be found alike intolerable to producer and consumer.

The whole of these difficulties may, I believe, be easily overcome by the adoption of a system more in accordance with the present advanced state of practical

science and knowledge, and which involves *the entire abolition* of the whole of the existing modes of steeping the flax in the straw.

Steeping Injurious.—Not only is the present process of steeping inconvenient and unnecessary, but it is highly injurious, as it imparts its injurious dyes to the fibre, deteriorates, and gives to it an inequality of strength, which, in the subsequent stages of manufacture, are exceedingly difficult to be overcome. I have found this to be more particularly the case in the preparation of the flax into a material capable of being spun alone or in combination with wool and cotton upon the existing machinery. I am anxious that the grower should not resort to any of the existing modes in the preparation of his flax; for any one step taken in that direction entails subsequently the necessity of much additional trouble and expense in addition to most materially affecting the strength and quality of the yarns and thread produced from it.

Purchase in the Straw.—The mode in which I should most prefer to purchase the flax would be in the straw, precisely as it is left after the removal of the seed. In this state it can be dealt with with a far greater degree of certainty than in any other, and may be, within four-and-twenty hours from the time of its being pulled ripe from the field, placed in a condition fit for preparation for spinning upon any of the flax, cotton, wool, or silk machinery of the country.

Facility of Transit.—As there would be obviously many inconveniences connected with the transit and carriage to a large distance of a material so bulky as that of flax in the straw, the grower might in certain cases, by the use of a common breaker and a pair of toothed cylinders, remove a great portion of the more bulky part of the plant, and thus send the fibre in a partially-cleaned state to the market. The chaff obtained from this partial separation of the straw from the fibre, which contains a very large proportion of the inorganic matter from the soil, and which not having been destroyed by the process of steeping, will form a most valuable material for mixing with cake, crushed seed, the mucilage formed from it, or other articles of cattle-food.

Further Process.—I am anxious, however, to see the growers of flax deriving the full amount of benefit which is to be obtained from the complete preparation of the material into a substance suitable at once for the markets of Belfast, Dundee, Manchester, and the woolen districts. I am aware that in the hands of indidividual growers the process, although not a complicated one, but which still requires some larger amount of acquaintance with the *higher* branches of chemistry than generally exists among the agricultural classes, must not be considered as generally available. I believe, however, that a plan might be very easily devised by which the flax-grower might secure for himself these benefits, which, according to the recommendation of the Royal Flax Society, are to be exclusively engrossed by speculators and capitalists. Indeed several applications have already been made by parties requesting me to grant them monopolies under my patent, for the perfection of flax, within an area of a certain number of miles in various parts of the country. I believe that such a course is one eminently calculated to rob the grower of his legitimate profits, and to retard that extension of the growth of flax which I conceive to be indispensably necessary for the welfare of the country. Within the last few days, I have been informed of a case in which a gentleman in Ireland has for several years grown flax to a very great extent in one of the districts in which a monopoly is possessed by "a steeper," under the patent system. Possessed of this monopoly over a large tract of country, such an individual has the whole of the growers entirely at his mercy, and can offer them whatever sum he pleases for their produce, knowing full well that no other available market exists for many miles. Indeed, to such an extent has this system of extortion been practised, that many of the growers have been compelled, after keeping the flax in stack for the last two or three years, to sell for 30s. per ton that for which he would have received, but for this monopoly, from £3 to £4. The gentleman to whom I have referred has now about 700 tons of flax in stack, which he will not sell at the ruinous price offered by the "steeper," and further states that he will not sow a single acre of flax in the present year, unless some fresh mode of disposing of his produce is created.

Joint Stock Associations.—The mode in which I would venture to suggest this system may be prevented, and the growers be enabled to derive the full benefit of the perfection of the flax, would be by the establishment in different localities throughout the country, by means of joint subscriptions among the flax growers in such district, at which the preparation of the material could be carried on, and the profits derived from the process distributed at stated periods among the shareholders in proportion to the amount of shares or interest which they held in the

undertaking. This system is one which has been found to work well among the cultivators of the sugar-cane in the West Indies; and there is no doubt but that it would work equally well among the producers of flax in this country.

Local Societies.—A second mode by which this object could be attained, would be by the erection of suitable premises and apparatus by each of the various local agricultural associations or farmers' clubs in the country, the buildings and patent being the property of the club or association, and the use of them being allowed to members or subscribers, upon payment of such sums per ton or per acre as might be agreed upon by the parties.

Landlords.—There is also a third mode which might be made available in the case of the failure of either of the preceding plans, which is, that of the erection of the required accommodation by the landlords for the use of their tenants, upon the payment of such sums as would be calculated to cover the interest of the capital invested, and the cost of keeping the buildings and apparatus in an efficient state of repair.

Profit.—There remains yet one very important point, to which I have at present only incidentally alluded—I mean the profit to the farmer upon the cultivation of flax. If I have succeeded in convincing you of the extent and certainty of the market which exists for the produce, and of the absolute necessity which exists for your endeavoring to obtain possession of those markets, I have no doubt that I shall be enabled most satisfactorily to prove that you can do so with considerable profit and advantage to yourselves.

Seed and Fibre.—It will be found in the first place that the profit derived from flax under the present modes of steeping, combined with the saving of the seed, is considerably greater than can be obtained from the cultivation of *wheat*, at present prices. Mr. Warnes states that the profit upon fourteen acres of flax, grown and prepared by him last year, was upwards of £6 per acre over that of his wheat. His figures are—

	£	s.	d.
Prepared Flax sold at Leeds, - - - - -	238	16	0
Value of seed, - - - - - - - -	126	0	0
	364	16	0
Deduct cost of preparing Flax, - -	140	0	0
Gross profit, - - - - -	224	16	0
Value of produce of 14 acres of Wheat, at 38 bushels to the acre, at 40s. per quarter, - - - - -	133	0	0
Total balance in favor of Flax over Wheat, not including 6 tons 6 cwt. of husks equal to hay, 26 cwt. of tow, and many loads of refuse for littering cattle, - - -	£91	16	0

Seed alone.—The above is an instance in which both the seed and the fibre were saved and prepared. There are cases, however, in which the flax is grown solely for the purpose of seed, and others in which the seed is wasted or destroyed, the only object in such case being to obtain the fibre. In either case there is a greater profit to the grower than can be obtained from almost any other crop. Mr. Beare, probably one of the best farmers in the county of Norfolk, grows every year one or two acres of flax after wheat, and without manure, for the seed only. His crop last year yielded 26 bushels, which, at 10s. per bushel, would be worth £13; while his wheat crop did not exceed five quarters, which, sold at 40s., would yield but £10, leaving a profit in favor of flax seed alone (the straw being used as litter for cattle) of £3 per acre. I may state upon this point, as a general rule, under the present system, that, when grown for its seed alone, the flax fibre is coarse, and is not considered of so much value as that of a finer description.

Fibre alone—Seed destroyed.—Numerous instances might be adduced, from the reports of the Royal Flax Society, to show that even in cases where the seed has been thrown into the steep pits and destroyed, the profit upon the sale and preparation of the fibre was still greater than that of many other of the crops. As the example thus set is one, however, which is not likely to be generally followed by enlightened agriculturists in this country, it is unnecessary for me to trouble you with any figures upon that point.

New Process.—These, however, are returns obtained under the *present mode* of

steeping and preparing the flax. According to the plan which I venture to submit, the returns will, I anticipate, be even MORE favorable to the grower.

SOLD IN STRAW.—In the case in which he may elect to dispose of his *flax in the straw*, the farmer would derive the full value of his crop of seed, and the straw would be worth to him £4 per ton, the produce being about two tons per acre. He will not be required, as is the case at present, to pull his flax before it is perfectly ripe, or before the seed has been fully and completely formed. Indeed the *coarser and more developed* is the stem of the plant, the more valuable will it be for the purpose of adaptation to the woollen and cotton machinery, and the fine gossamer threads can be produced from it with greater certainty and precision than when pulled in an earlier stage of its growth. The grower, therefore, need be under no fear as to the fineness of his crop, and he may obtain from it as large an amount of seed as his land will produce.

PARTIAL CLEANING.—If the difficulty of transporting the flax in the straw to any great distance should render it necessary for the grower to reduce its bulk, by the removal of some of the woody part of the plant, he will obtain by so doing, in addition to the seed, a valuable article of food for his cattle, and the enhanced value of the fibre will more than repay the amount of labor bestowed upon it.

COMPLETE PREPARATION.—If disposed to carry the preparation of the flax to its usual stage of adaptation to the spindles of the manufacturer, whether cotton, linen, wool, or silk, he will derive a profit larger and more certain than any which he can obtain under the present process; while, from the refuse straw impregnated with the salts used in its preparation, he will obtain a manure of the richest and most fertilizing character.

SOCIAL ADVANTAGES.—One word upon the social advantages which must result from an extended cultivation of flax, and my remarks (already, I fear, too protracted) will have been brought to a close. Upon this point, I cannot do better than quote a few words from the report of one of the special correspondents of the *Morning Chronicle* who visited the small village of Trimingham, where Mr. Warnes has for several years most sedulously and successfully devoted himself to the cultivation and preparation of the plant.

"The condition of the inhabitants of the village," he says, "was a few years since most deplorable, and the amount of pauperism exceeded that of the adjoining parishes. Since the introduction of flax culture, this state of things has passed away. There is not a pauper in the parish; the poor-rates are nominal; there is not one able-bodied laborer, nor any portion of his family, who may not obtain constant employment throughout the whole of the year, and the moral and social state of the village will bear comparison with most. If the growth of flax can produce results required similar to those which I have witnessed at Trimingham, there can be no doubt that the sooner it is cultivated to a greater extent in this country, the sooner will the enormous burden of pauperism decrease; and happiness and contentment be more generally diffused among the large masses of our laboring population."

The Chevalier CLAUSSEN then laid before the Council the following different specimens:—

1. Samples of flax in the straw, pulled and rippled.
2. Sample of flax-straw, prepared according to the new process, adapted for linen manufactures.
3. Sample of long fibre scutched from part of No. 2.
4. Samples of flax-fibre, adapted for spinning on cotton machinery.
5. Sample of yarn spun on cotton machinery, some from all the above flax fibre, others mixed in various proportions with the American cotton; these mixtures being termed by the inventor flax-cotton.
6. Samples of flax-fibre prepared for mixing with wool.
7. Samples of yarn produced on ordinary woollen machinery, composed of wool and flax in various proportions, termed by the inventor flax-wool.
8. Samples of flannel woven from the above.
9. Samples of fine cloth woven from yarn composed of flax and fine wool in various proportions.
10. Flax-fibre prepared for mixing with silk, and dyed of various colors.
11. Flax-fibre mixed with spun silk, and termed by the inventor flax-silk.
12. A sample of yarn produced from the above.
13. Samples of flax-cotton yarn dyed of various colors.
14. Samples of cloth woven from flax-cotton yarn and wool, dyed.

The following are the advantages detailed by the Chevalier Claussen and his friends, as possessed by the new process over the old methods:—

1. That by the Chevalier Claussen's process the preparation of long fibre for scutching is effected in less than one day, and he always produces a fibre uniform in strength and entirely free from color, much facilitating the after process of bleaching either in yarns or in cloth.

2. That he can also bleach it in the straw at very little additional expense of time or money.

3. That the former tedious and uncertain modes of steeping are superseded by one perfectly certain with ordinary care.

4. That in consequence of a more complete severance of the fibres from each other, and also from the bark and boon, the process of scutching is effected with half the labor usually employed.

[These advantages referred to that portion of the invention that includes the preparation of flax for spinning upon the ordinary flax machinery, and suited to existing markets. The further advantages have reference to the creation of new markets for British produce.]

5. That by the new process flax is rendered capable of being spun, either in whole or in part, on any existing spinning machinery.

6. That the fibre, to be mixed with cotton, or spun alone on cotton machinery, is so completely assimilated in its character to that of cotton, that it is capable of receiving the same rich opaque color that characterizes all dyed cotton; and, consequently, any cloth made from flax-cotton yarn can be readily printed, dyed, or bleached by the ordinary cotton processes.

7. That flax-fibre can be always produced with profit to the British grower at a less price than cotton can be imported into this country with profit to the foreign producer.

8. That as a consequence of this advantage, the manufacturers of this country will be less dependent on the fluctuations of the cotton crop for a supply of the raw material, and a more regular employment will be given to the manufacturing population, and the present amount of local rates be greatly diminished thereby.

9. That the British grower will derive great benefit from a supply of the wide demand thus opened to him.

10. That with respect to the advantages of being able to spin flax in combination with wool on the existing woollen machinery, the first is, that the flax prepared by M. Claussen is capable of being scribbled, spun, woven, and milled, in all respects as if it were entirely wool; having an advantage in this respect over cotton, which has not the slightest milling properties; on the contrary, the flax-fibre is capable of being even made into common felt hats, with or without an admixture of wool. To such an extent have the milling properties of flax been proved, that the sample of cloth exhibited had been woven to 54 inches wide, and milled up to 28 inches wide.

11. That the flax-fibre will not, under any circumstances, when prepared for spinning with wool, cost more than from 6*d.* to 8*d.* per lb., while the wool with which it may be mixed will cost from 2*s.* to 4*s.* per lb.; consequently reducing the price of cloth produced from this mixture 25 or 30 per cent. below the present prices of cloth made wholly from wool, and being of equal, if not greater durability.

12. That short-wool refuse, which cannot by itself be spun into a thread, may, by being mixed with this thread, be readily spun and manufactured into serviceable cloths.

13. That there is a probability of a further demand being opened up for this fibre in the flannel and woollen trade.

14. That by this process flax may be also so prepared as to be spun in any certain proportions with silk upon the existing silk machinery; that when so spun, it is capable of receiving considerable brilliancy of tint. That the fibre may be prepared for thus spinning at a uniform price of from 6*d.* to 8*d.* per lb. That as it may be spun in any proportions with silk, it is evident that the price of the yarns must be reduced according to the relative proportions of the materials employed, thus extending the markets, and giving increased employment to the operatives.

15. That, by M. Claussen's process of bleaching, any useless flax can be converted into a first-rate article for the paper-maker, at a less price than the paper-maker is now paying for white rags; and suitable for the manufacture of first-class papers.

In conclusion, M. Claussen and his friends had no doubt that a plan might be devised by which the grower of flax would derive not only the benefits to be obtained from the sale or consumption of his flax-seed, and the sale of his straw, as stated in the paper read, and the further advantages to be derived by him from the partial

separation of the woody part of the stem from the fibre, which would reduce the cost of transit, and provide for a larger return to the land; but also the larger profit to be derived from the transforming of the straw into fibres suitable for any of the purposes above described, according to the suggestion pointed out in the paper read to the meeting, and thus secure to themselves that double profit, which, under the present system, it was all but impossible for them to obtain.

Sir James Graham inquired whether the farmer, in separating the seed from the straw, would be liable to injure the fibre? To which

M. Claussen replied that no such injury to the fibre would arise from any of the present modes of separating the seed from the straw, so long as the separation was made longitudinally; that an ordinary threshing-machine might be so employed as not to injure the fibre; in fact, that the only injury that could arise would ensue from breaking the fibre across, or steeping it on the old system.

The Chairman thought it desirable that no time should be lost in putting the farmer in possession of all the conditions under which flax could be grown advantageously, and conveyed to market at a profit, as the time for sowing the crop was near at hand.

Mr. Alcock, M.P., stated that coals could be brought from Yorkshire at 7*s.* 6*d.* per ton, but they were a compact heavy article of transit, while flax would be bulky and light.

Mr. McDermott observed that the bulk of the flax might be reduced by partial removal of the straw by a machine that would not cost more than £10, and also by hydraulic pressure, as in the case of hay for exportation, and that probably the railways might eventually contract at lower rates for the conveyance of this new branch of traffic.

Mr. Majendie thought if the machine was portable, it might be let out from farm to farm. If the new process did not produce any injurious effect on flax that rendered it unfit in any degree for subsequent use in all the ordinary stages of manufacture, it would prove of great benefit to the country.

Mr. Christopher, M.P., and Colonel Challoner, thought it desirable that the cost of machinery required by farmers for commencing this branch of cultivation, so new to many of them, should be accurately ascertained.

Mr. Miles, M.P., had been just endeavoring to obtain that information from one of M. Claussen's friends near him, and it appeared that one machine only was essential, but that two might, for further preparation of the flax, be employed, if the farmer thought proper; the first machine would cost £10, and the object of it was partially to separate the fibre, leaving the shoves or gross remaining matter, amounting to two thirds of the original flax, behind, to be returned by the farmer to the land; the second machine would cost £50, and was adapted for clearing the fibres effectually from the refuse after the first chemical process.

The Hon. Dudley Pelham, M.P., conceived it important to inquire into the effect that the introduction of this new system would have on the relative employment of laborers in flax culture and its operations.

Mr. Kennedy inquired the price of new "British cotton" compared with that of the ordinary foreign cotton, and was informed that it was from 4*d.* to 6*d.* per lb.; while the foreign cotton ranged from 8*d.* upwards, according to quality.

Mr. Fisher Hobbs informed the Council of the result attending flax cultivation in the eastern counties, where the growers had been unable to obtain a market for their produce. The farmer's capital was, he thought, too nearly exhausted at the present moment to render it prudent for him to embark in any new line of cultivation, without being first well assured that after having overcome all the practical difficulties of a new crop, and its preparation for sale, he should find a ready market for its disposal. He hoped, as in the case of wool, that there would be a probability of farmers having a flax market, so that the article might be taken off their hands at so much per acre or per ton, without loss or risk of the capital employed. Seeing among them that day a member of the distinguished family of the Leeds flax-spinners, he would appeal to him on this point, in the hope that he would be able, from experience of the whole question, to favor them with an opinon on the subject.

Colonel Challoner then ascertained, by inquiries addressed to M. Claussen, that flax injured by the farmer for sale and use under the old system, was available and equivalent to uninjured flax for the purposes of M. Claussen, who would give as good a price for it.

Mr. Marshall, M.P., replied that his brothers were the flax spinners; he was only, to a limited extent, a grower of flax for their use. They were, he believed, in the habit of paying £7 to £8 per acre for the use of land for the flax crop, they bear-

ing all the expenses of cultivation, while the farmer had the benefit of the land for the remainder of the year. There was at the present time, he believed, a considerable market for flax. In Belgium the "fabricant" relieved the grower of all trouble and responsibility attending his crop, visiting his farm in person and taking it at a valuation. On the present plan, the object was to obtain long fibre; cloth formed of which in the warp with cotton in the weft was stronger than that formed entirely of cotton, and more durable in wear, being employed for sheeting and shirting. On the new principle, the flax, it appeared, was broken up into short fibre; and instead of steeping in hot or cold water, chemical means were employed to facilitate the process without injury to the material. If land was clean and in good order, flax might be grown without manure. But the farmer could not, under the present system of steeping, both grow it and prepare it for the manufacturer. With regard to thick and thin sowing, that question had reference to the object of the cultivator, namely, whether a fine fibre and little seed were required, or a coarser fibre with a full crop of seed. On the banks of the Lys, in Belgium, where the finest flax had been grown for centuries, and used for making the finest lace, they practised thick sowing, three and a half bushels per acre, and obtained about fourteen bushels of seed per acre; but the stems were long and straight, without branches, and the longest fibre was obtained. In Ireland and Russia thin sowing was practised, from two to two and a half bushels per acre, and from sixteen to twenty bushels of seed were obtained; but the stems of flax branched out more, and an inferior fibre was the result. It would be the safest plan for beginners in this country to sow thin, and thus get more linseed and straw. He concluded by remarking, that if M. Claussen succeeded in his laudable endeavors, so much the better would it be for the farmers of this country.

Mr. Macartney thought that the average growth of flax in Ireland had not fallen off. He referred to Lord Clarendon's liberal aid in promoting its cultivation in that part of the United Kingdom, to the mode in which the factors purchased the crops, to the cost of conveyance, and to Schenck's improvement in steeping.

Mr. Hammond had grown flax in Norfolk, but finding no market for his produce he had sent his flax to be manufactured into linen for his own shirts. He had also had several of the cottages on his estate thatched with the straw, and more beautiful thatch he never saw.

Mr. Fuller, M. P., had also grown flax in Sussex, but he had no better success in getting it off his hands; and when he offered it to a large manufacturing house, he was told that they could only give him linen in return for it.

Mr. Shelley remarked, that there was no difficulty in farmers growing flax; the only difficulty was to get a market for it. In Sussex it could not be turned into money. If M. Claussen could make it marketable for them he would find no want of growers. It was, he thought, of little purpose to tell farmers of the quantity grown and the price it ought to fetch.

M. Claussen replied, that it was both simple and easy to prepare the flax for the spindle, and he would undertake to furnish persons properly instructed, who would direct the farmers how to proceed. There was one house at Bradford, that of Messrs. Quitzow, Schlesinger & Co., flax-spinners, dyers and merchants, whose only fear was that enough flax would not be grown for their use; and they were, he believed, ready to give £4 per ton for flax of fair quality.

Professor Way observed, that the present system of preparing flax only applied to existing markets. M. Claussen's method, as he understood it, had the merit of opening new and extensive markets for this article; and there was one important point in the new plan—that there would in future be no distinction of flax into fine or coarse qualities. The farmer, too, under the new system, would not be obliged to pull his flax, as under the system hitherto in use, before it was ripe, in order to secure a higher price for his fibre; but, on the contrary, it would not be necessary to pull it until the seed and stalk were fully ripe. The farmer would thus obtain a larger portion of fibre in proportion to the bulk, and a heavier crop of seed. He understood the quality of fibre in the new process not to be so essentially of importance as under the former plan, and that farmers may break the flax to reduce its bulk. The new material would be intermediate between linen and cotton; less valuable than the one, but more valuable than the other.

Mr. Shelley then rose to propose a vote of thanks to M. Claussen for the favor he had done them in his attendance on the occasion, and the information he had laid before the Council. He heartily wished him success in the practical development of his discovery, and hoped that the farmers would reap the benefit of it, and obtain a fair remuneration for their produce.

Mr. Miles, M. P., seconded the motion. Kind, indeed, it had been of M. Claussen to come before them that day, before he had completely secured his patent, to give them the earliest notification of the agricultural bearing of his researches. He trusted that the result would prove as good for himself as for the farmers whose interests he had then advocated.

The Chairman then put the vote, which was carried unanimously. He was sure they all felt deeply obliged to the Chevalier Claussen for the favor he had done them. The information had been fully submitted to their consideration, but of course they received it without any inference being drawn from such reception that the Council held themselves responsible in any degree for the opinions expressed by M. Claussen. He thought it his duty as their chairman to repeat this caution. On that day fortnight, namely, on Wednesday, the 26th of February, at noon, M. Claussen had consented to again attend, for the purpose of detailing, after the completion of his specifications, the details connected with his new process. Mr. Beale Browne would probably on the same day bring forward the statement, of which he had given notice, of his long experience in the cultivation of flax.

In his *Agricultural Gazette* of the 22d February last, in his "notice to correspondents," Doctor Lindley says :—

British Cotton.—We have received a sample of flax prepared according to M. Claussen's method, from Mr. Christopher, who advertises on the subject in our columns. It appears well adapted for manufacture from cotton machinery.

RAILWAYS IN THE UNITED STATES.

More than thirty years ago, when about to establish a weekly journal, which might be looked to as *one* organ at least, in the Union, devoted to the cause of the plough; the first reflection was, how indispensable to agricultural prosperity is *cheap, and safe, and quick transportation!* The words "Internal Improvement" were accordingly made part of the sub-title of the old "American Farmer."

Under that head, just twenty-six years ago, we published a letter, then considered remarkable, if not precocious and chimerical, from Thomas Gray, the great civil engineer of England, dated the 2d of August, 1824. In that letter, which time and history have rendered interesting and curious, he says, prophetically, as to railroads between London and Edinburgh, (on which cattle are now transported in twenty-four hours from city to city,) "The great saving which *might* be effected by the employment of *steam power*, will be obvious to every one, when it is mentioned, that one steam engine would, on an improved railway, draw from London to Edinburgh *three* stage coaches, (each carrying twice the luggage and number of passengers of ordinary coaches,) in thirty hours, which now require three hundred horses, and at least fifty hours for the performance of the journey!"

United States.—The census of the United States, which, however, is only partially completed, offers this result:—So far as the general nature of the returns can be inferred from the data at hand, the population of the Union will be about 25,000,000. From the year 1800, when the number was a little more than 5,000,000, to 1840, when it had advanced to 17,000,000, the decennial rate of increase was about 33 per cent.; but this rate would have given for 1840 a population of 22,000,000 only; therefore the ratio of increase is greater. Material power has also been developed with population. Great Britain alone excepted, no State in Europe could now maintain equal armaments in the field for any length of time. This marvellous growth is deranging all the old traditions of "balance of power." America is, in fact, not only a first-class State, but, in a few years, if no internal disorder shall

occur, she will be the greatest of all existing countries. Should the 1840–'50 rate of increase be maintained for fifty years, the population will then amount to one hundred and ninety millions—nearly equal to that of the whole of continential Europe. And were it possible to conceive the same ratio maintained for another fifty years, the census of 1950 would give the astounding number of 1,696,000,000!—*Eng. Paper.*

A NEW ENEMY TO THE WHEAT CROP.

EDENTON, N. C., Feb. 7th, 1851.

JOHN S. SKINNER, Esq.:

Dear Sir:—I take the liberty of sending you, both for your examination and the good of my brother farmers, in case you find it a sufficient curiosity to report upon in a future number of your very valuable periodical, a very singular, and in this section of the country, a very novel visitor. In a field of wheat which I sowed from the 25th to the 28th of October, in rather a late white wheat, (the blue stem,) on land which was ploughed early in August, covering a considerable growth of white clover and weeds, and only stirred on the surface with small ploughs when the wheat was sown, an insect, a specimen of which I send you, made its appearance early in December in one portion of the field, and has since gradually spread over one hundred acres, (not quite all the field.) During December we had light rains and very mild pleasant weather till Christmas, when it was cold enough to freeze considerably; we then had also two days of very cold though not heavy rain. In January it was dry and mild till the 29th, when for three days we had it colder than it has been since 1835 or '36. I noticed the thermometer at sunrise on the coldest morning at 12½°; some say it fell to 10°. I mention this to show you that the insect has lived and increased greatly through all kinds of weather, except *very heavy rains.*

It appears on the under-side of the leaf in great numbers, like the cabbage louse in gardens, and draws the substance from the plant, until it withers to the surface of the earth. Large patches of the field now appear almost bare, and if their ravages continue much longer, I fear the whole field will be destroyed, for by keeping the plants so closely nipped, they will not be able to spring; though I do not think they could injure plants three weeks hence, which they might then attack for the first time. I do not know how many days their life lasts, but at one stage of their existence they have wings like an ant, which enable them to fly five or six feet at a time, I believe. I inclose one with wings. I hope I have not written enough to weary you, though I thought it proper to say all that I know of the insect. No one here has ever seen it before, and if it is a new enemy, it is certainly destructive enough to be worth examining into. I shall hope, in your April number, to hear your opinion of it. My name I of course do not care to see in print in connection with it, my only object being to elicit information which may be valuable.

Very respectfully,
T. L. SKINNER.

P. S.—I send but one insect with wings, and he is attached to a leaf with black thread around it. There are others in all stages of life.

As facts like these become, in time, historical of the epochs signalized by the appearance of new enemies to grain crops, it is always best to give, not only all the facts observed, but the name and locality of the narrator. We understood from Senator Pearce of Maryland, a very skilful and observing farmer, that this insect has made its appearance in the wheat fields of Kent county in that State.

In a previous letter Miss Morris had stated that the insect belongs to the family of plant lice, or aphidæ.

GERMANTOWN, March 12th, 1851.

Sir:—I trust you will pardon me for not sooner acknowledging your last favor of Feb. 28th, when I plead illness as my only excuse, and trust that Mr. Skinner's letter to you may be in time to enable you to acknowledge it in the April number of your journal.

Any information in my note to you which you may consider valuable is at your service, and I regret to say I have few remarks to make in addition that would prove advantageous to the cultivator. Had your correspondent known the history of this universal and noxious insect, he would have destroyed at once every plant of wheat on which he saw it in the fall, and thus have prevented its spreading, and I doubt whether there will ever be found any other remedy.

They increase more rapidly than any other of the insect race. It is said on good authority, that they produce three entire generations in forty-eight hours, in favorable seasons; and I know by experience that no cold of *this* climate will *kill* them, and that in our mild winters they increase frightfully.

A copious shower of tobacco tea is often prescribed. This may do when they are so situated as to allow of the tea reaching them, but as they generally hide and feed on the under-side of the leaves of plants, and cause the leaves to curl, they secure themselves from such applications that do more injury to the plant than to the lice. They pass through all their different stages of existence in a few days, when they fly from plant to plant, and thus are soon spread over a field or tree. It therefore appears hopeless to propose any other remedy than the death of a small plant, and amputation of an infested branch on a large one; at least I have never succeeded in any other.

It is true, as you say, that Köllar says but little on the subject, but you will find an interesting article in Harris's book on Insects injurious to vegetation, page 186, which may suggest some remarks worthy a place in your valuable periodical.

Very respectfully yours,

M. H. Morris.

J. S. Skinner, Esq., New-York.

Importation of Iron.—Among the articles of American manufacture which suffer under the effects of the tariff of eighteen hundred forty-six, that of iron is prominent. The effect upon some other articles has probably been as great, but that of iron will do us for the present; and in relation to it shall state but one fact taken from the official returns—the importations. From 1822 to 1829, the importations of foreign iron varied per annum but little, and were a trifle over 10,000 tons From that time it increased slowly until 1840, when it reached 60,000 tons. 1842 it went down to 50,000 tons, but in 1846 went up again to 60,000 tons. Then was passed the British tariff, but owing to the high prices in England the imports of iron into this country did not increase for two years, but prices abroad then falling, in 1848 the imports went up to 80,000, and 1849 to 173,000 tons.

The consolation suggested to the farmer by the free-trade advocate is, that he gets his iron cheaper, while his own good sense should tell him, that the men who in this country ought to be employed in making these 173,000 tons of iron, consuming, while so employed, their pay in beef and mutton and potatoes of the American farmer, being now driven from their employment as manufacturers, must go to the West, and there help to add to the surplus of all sorts of agricultural produce; and finally, when all our iron works and furnaces are blown out and destroyed, John Bull will give us what he pleases for our produce, and charge us what he pleases for iron; for what American will be fool enough to risk his capital under a commercial policy in which there is no stability?

But if, on the contrary, we would put our foot down, and say, He who manufactures for us any thing for which we have or can produce the materials, must come and do it here, millions would come to our country to embark in every industrial pursuit. The great bulk of the farmer's produce would find a market at home. Ours would be the commanding market, and foreigners would come for our surpluses, asking—what will you take for what you have to sell, and what will you give for what you have to buy?—instead of our going to them, begging them to buy and asking them to sell. When does the grain-seller get most for his corn, in

a dry season, when crops are short, and his neighbors come to his granary, and ask, What's your price for corn; or when he has to take his corn to a storekeeper to know what he will give?

REPEAL OF THE TARIFF OF 1846 ON AGRICULTURAL PRODUCTS IN FAVOR OF CANADA.

Another session of Congress has closed without the passage of the bill for the prostration of the agricultural interests of the Union, commonly known as *the Reciprocity Bill*, the object of which was that of admitting the products of Canada duty free, while the duties on those of our products that Canada required to purchase, as tobacco, cotton, &c. &c., are continued. The bait held out to induce this sacrifice of the most important interests of the country was the free navigation of the St. Lawrence, ours by right, and for which we have already paid thrice its value in the grant to the Canadians of permission to use our canals, railroads, and rivers, on their road to market. Of little value originally, that river is becoming daily less and less important, as with the increase of roads the cost of toll and transportation diminishes.

"We have now before us," says the *Washington Republic*, "the new tariff of tolls on the New-York canals, by which we see that the rates of the present year will be about one fourth less than those of last year, the necessary consequence of which must be a great diminution in the proportion of the trade of Canada and the Western States that will seek the outlet of the St. Lawrence, and a diminution in the value of that river as a channel of trade. Such being the case, it will be a nice question to determine how the Reciprocity Bill should be altered to suit this new state of things. Last year Canada claimed that, in consideration of granting us the use of the river, for which we had already largely paid, she should be freed from the payment of duties on all she needed *to sell*, while retaining the duties on all she needed *to buy*. It was a one-sided bargain, certainly; yet there were members of Congress who advocated it.* Now, however, that the value of the river is diminished at least one half, we presume they will be disposed to agree with us that it would be necessary to revise the terms.

"It is threatened that Canada will retaliate, for our failure to pass this bill, by closing the Welland canal to our trade, and by doing many other things; but we fear that that canal runs some risk of being closed to all the world, by the abstraction of all its business, as our canals and railroads come further into operation. It is, even now, our trade that supports it. The total American tonnage that passed *through* it last year

* And Mr. Holcomb, of Delaware, says that, as a question to be discussed by the Maryland State Agricultural Society, with a view to remonstrance with Congress against the passage of any such law, it was held to be too much of a political question to be entertained by the Society. So that the farmers of the United States were saved from this so-called reciprocity "rather by a God-send, than by any sagacity or resolution of their own." What said Hercules to the waggoner who prayed assistance to get his waggon out of the mire? We are sometimes tempted to wish that all other organizations of party could be abated, and the whole country resolve itself, *as it is doing*, into the *friends* and *opposers* of *domestic industry*—to the working up of our own materials, and the protection of *American* interests, against the ceaseless, all-pervading "policy of British merchants," as it was aptly denominated by General Jackson.—*Ed. P. L. & A.*

was 302,227 tons, while the Canadian that passed *on, or through*, was but 281,873, and yet they threaten to close it, and thus lose more than half the tolls. The closing of the shop against the shopkeeper's customers would be an original idea. That of the abandonment of the old and high-priced shop by the customers, in favor of the newer and cheaper shopkeeper, is an old one that has often been acted upon; and we are much disposed to think it will be so in the present instance. It is time that our worthy friend *Bull* should be taught that we are neither to be seduced nor threatened into the purchase of his wooden nutmeg, becoming daily more and more wooden."

A PREMIUM OFFERED.

A copy of the JOURNAL OF AGRICULTURE, 3 vols., of more than 600 pages each, beautifully illustrated, with colored prints and well executed steel engravings, will be given by the editor to any one who shall present, to the next meeting of a State Agricultural Society, the most exact and detailed account of the outlay and income of a Farm or Plantation. The object is to show, by an actual exhibit, or by a form which shall be deemed satisfactory, the net income of the year's operations—such as every well-bred Merchant can exhibit when he balances his books at the end of the year. The Committee of three to award this premium, to be appointed by the President of the State Society, and ought to be Merchant Farmers—who could say, on a view of the statement, whether it embraces a full account of all that should be brought into the reckoning. Any improvement to this offer, which may be suggested by Mr. DELAFIELD, President of the New-York State Agricultural Society—himself a first rate Merchant Farmer, and capable of appreciating the object of this offer—will be adopted. The purpose is to get young Farmers *in the habit of thinking*, so that they may be able to tell whether farming is likely to prove for them a *cornucopia*, or whether they are likely to come out at the *little end of the horn!*

HOW THE PLOUGH GOES.

NEW subscribers to the *Plough, the Loom, and the Anvil*, from 1st January to 15th of March, number over two hundred and fifty; but it is flattering to the character of the work, at the same time that it proves its national spirit and objects, that it should *spread over so wide a portion of the country*. These subscribers come from Mississippi—New Jersey—Virginia—New-York—Alabama—Louisiana—Georgia—Delaware—Indiana—Pennsylvania—North Carolina—Massachusetts—Tennessee—Kentucky—Maryland—Maine—District of Columbia—Ohio—Illinois—Florida—South Carolina—Missouri—Connecticut—23 different States.

☞ While our Agent at Charleston forbids us to send him any more, a gentleman of Louisiana, whose letter may be seen, writes under date of March 1st, 1851:—

You may place me upon the list of the one hundred, (I hope it may be ten thousand,) who will pay you ten dollars [for five copies] to aid you in your glorious enterprise. The *Plough, the Loom, and the Anvil* ought to be read by every free-born son of America. If the people of the South would read it and practise its precepts, they might soon be the most independent people on the earth.

The papers of the day will have informed the readers of this journal of the sudden and unlooked-for death of its Editor, almost at the moment when this number was ready for publication. The following notice of this melancholy event is taken from the *National Intelligencer*, and the high character therein given will certainly be vouched for by all who knew the subject of it. The Agricultural interest of the Union has lost in Mr. Skinner a friend that will not speedily be replaced.

OBITUARY.

In the lamentable death of John S. Skinner, announced in our last by a note from our Baltimore correspondent, whilst we have lost a friend of long standing and always highly esteemed, the country at large has also sustained a loss which will not be soon or easily repaired. Though his whole life had been marked by a jealous interest in the welfare, not of the Commonwealth only, but of every class of which it is composed, he was never more usefully engaged, or with better prospects of success, than at the moment of his death. We refer of course to his arduous undertaking and most valuable Agricultural and Industrial enterprise, the periodical to which he has for several years devoted himself with an intelligence and industry which had at last established it as a permanent publication, during his lifetime at least.

We subjoin a notice of the life and character of Mr. Skinner, from the pen of one who knew him well, and is qualified to speak of him from that knowledge. To the testimony of such a contemporary, it is due from us to add, that we had personally known Mr. Skinner intimately, in prosperity and in adversity, and in every relation of life, and are able to bear testimony to his integrity, his honor, his kindness of heart, his attachment to his friends, and his devotion to his family; in which relations, composing as a whole his character, we only express our conscientious belief when we say, that in all these essentials he was entitled to a place in the first rank of humanity.

FROM THE BALTIMORE "CLIPPER" OF MARCH 22.

We announce with deep sorrow the sudden and painful death of John S. Skinner, Esq., the well-known Editor of the *Plough, the Loom, and the Anvil.*

Between two and three o'clock yesterday afternoon, he entered the Baltimore Post-office to transact some business, and on leaving stepped toward the side door on North street, but unfortunately mistook for it the door which leads to the basement, and, opening it hurriedly, made one step and plunged head foremost down the flight of steps to the bottom, making, in the fall, a complete somerset. The clerks and carriers (one of whom saw him open the wrong door, but had not time to warn him of the mistake before he fell) immediately ran to his assistance, and found him speechless! As soon as possible they took him up and carried him into the Postmaster's room, placed him on a comfortable cot, and called in a number of physicians, among whom were Drs. Buckler, Riley, and McKenzie, who did every thing that the best medical science could suggest; but his skull was found to be badly fractured at the base, and his injuries of such a character as to leave no hope of his surviving. He remained totally insensible until twenty-five minutes past seven o'clock last evening, when he ceased to breathe. His afflicted wife was present soon after the accident occurred, as were also ex-Mayor Davies and other relatives, whose grief at the sudden bereavement may well be imagined.

Mr. Skinner was no ordinary man. He was known throughout the whole Union for his talents, untiring industry, and strict integrity. For twenty years he was the able Postmaster in this city, having been commissioned by President Madison, and continued until nearly the close of General Jackson's second term.* It is a singular coincidence that he should have met his death in the office the affairs of which he so ably managed for many years, but from which he was removed more than fifteen years ago.

General Harrison coming into the Presidency, he was appointed Assistant Postmaster General, the duties of which he ably discharged until removed by another Administration; since which he has been engaged in editing and conducting *The Plough, the Loom, and the Anvil*, an agricultural journal of the highest character. His death will be a severe loss to the agriculturists throughout the country, as he was an able and zealous advocate of their every interest.

In this city, where he was universally known and highly esteemed for his social qualities, unassuming demeanor, and generous impulses, the news of the accident which befell him, and the subsequent announcement of his death, created the most profound sorrow.

* Mr. S. was removed from office by President Van Buren—not by General Jackson.

The Plough, the Loom, and the Anvil.

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THE PROSPECT:

AGRICULTURAL, MANUFACTURING, COMMERCIAL, AND FINANCIAL,

AT THE OPENING OF THE YEAR 1851.

BY HENRY C. CAREY.

In now giving the closing chapter of Mr. Carey's review of the state of affairs at the opening of 1851, we desire to ask our readers, when they shall have finished its perusal, to determine for themselves if he has not fully established the proposition with which he set out, to wit:—"that, under that system which looks to war upon monopoly for the sake of perfect freedom of trade, the returns to both labour and capital increase." The facts he has furnished can scarcely, we think, leave upon their minds the slightest doubt of the perfect accuracy of the statement in his letter to the late Secretary of the Treasury, Mr. Walker, "that when we build the most furnaces we produce the most food—that when we build the most mills we produce the most cotton—that when we make the most cloth and iron we build the most ships—that when we most diminish our *necessity* for depending on distant markets we enjoy the most *power* to go to those markets—that when we look most to home we enjoy the most influence abroad."

We pray our agricultural friends to study the predictions of Mr. Walker, and to satisfy themselves that it is to the total failure of those predictions that they owe their present exemption from the ruin that has fallen on the coal and iron, the cotton and the woollen interests of the country. The policy of 1846 looked to the conversion of the whole people into farmers and planters, and rendering us more perfectly dependent on the monopolists of England. Its author predicted that we should by this time have more than a hundred millions of dollars of food for sale abroad. If we had, what should we do with it? Wheat sells in England for a dollar a bushel. Oats are not worth twenty-five cents. Barley is so cheap, that we are importing it—and yet it was to secure this great market of England that we closed mills and furnaces capable of turning out almost a hundred millions of dollars worth of cloth and iron, and prevented the building of mills and furnaces that would be now producing almost as much more!

CHAPTER VI.

PROMISES AND PERFORMANCES.

We are assured that the present glut of iron, cloth, and almost all manufactured commodities, is the mere result of past "over production," and that, if we only persevere in maintaining the tariff of 1846, all will come right. The production of iron and cloth will diminish, and prices will then rise, when cloth and iron making will then again become profitable. It seems, however, to be forgotten that the consumers will then have to pay higher prices, and that it was for the purpose of increasing, and not diminishing the power to obtain both cloth and iron, that the tariff of 1846 was passed.

To enable us to judge of the value of these predictions as to future "prosperity," it may not be amiss now to review the promises made on the various occasions of alteration in our commercial policy, with a view to see whose pledges have, and whose have not, been redeemed—whose anticipations have been realized, and whose have been disappointed. That done for the past and the present, we may be enabled to judge for ourselves of the future, and determine what value may be attached to the promises that now are made.

The men who urged the passage of the protective tariff of 1828, said that it would increase the value of labour. It did so. The reward of labour in food and clothing so much increased, that immigration trebled, and Europeans found

it advantageous to bring their labour here for sale. They said it would increase the return to capital. It did so. At no time had there been a more regular demand for capital, and at none had the increase in the value of land been greater. They said it would facilitate the acquisition of cloth and iron. It did so. The consumption of iron, and of cotton and woollen cloth, doubled. They said that it would promote commerce. It did so. Internal commerce increased with great rapidity, and so did the external. Our shipping grew at a rapid rate. They said it would give an abundant revenue. It did so. The revenue so far exceeded the wants of the government that when silks and coffee and tea were freed from duty, there was still so large a revenue that we paid off the three per cents. at par. They said it would improve the national standing with the world. It did so. It made us so much credit abroad, that all the nations in Europe were anxious for our bonds when we abandoned the production of commodities, and turned our attention so exclusively to road-making. Every promise of the authors of that tariff was performed and every anticipation realized. The country had never before enjoyed so high a degree of quiet prosperity, and the increase therein was greater from year to year.

It was objected, however, that high tariffs gave too much revenue, and tended to increase the power of the government, while they tended to impose taxes upon the many for building up the fortunes of the few—that cloth and iron would be obtained more cheaply under lower tariffs, while the prices of cotton and wool, wheat and flour, and corn and pork, would be higher—that protection tended to diminish commerce with the world and to prevent the growth of shipping, and consequently that we could not, under such a system, occupy our proper position in the world of commerce. The objections prevailed, and the result was the passage of THE COMPROMISE ACT, the result of which was first to destroy the merchants and the shipping interest; next, to sink the price of cotton from thirteen cents to six, and that of tobacco from $90 to $50 per hhd., and thus destroy the planting interest; next, to sink the price of wheat, flour, corn, and pork to a point lower than had been known for probably twenty years, and thus destroy the farming interest; next, to annihilate the revenues of States, which were thus rendered bankrupt; next, to sink from $7 to $4.48 per head, the power to consume foreign merchandise, and thus annihilate the revenue of the general government; and lastly, so utterly to destroy the national credit with the world that not only could the government effect no loan, but that the very name of America was held to be synonymous with bad faith and repudiation.

The friends of the system of 1828 repeated in 1842 the pledges given in 1828. They said, give protection to the farmer and planter in their efforts to bring the spindle and the loom, the hammer and the anvil, to the side of the plough and the harrow, and all will yet be well. There will then be made a market on the land for all the products of the land, and the farmer and the planter will grow rich, enabling the states to collect their taxes and resume the payment of interest on their debts, and enabling the merchant to import largely, and thus to contribute largely towards the national revenue. Labour will be in demand and shipping will increase, and there will then again be prosperity throughout the land and among all the interests of the nation.

These pledges were redeemed under the act of 1842. From the depths of adversity the nation emerged with a rapidity that seemed almost miraculous. The consumption of cotton doubled, and that of iron trebled, while all other branches of manufacture kept pace therewith. The return to the labours of the farmer and planter were large, and exports were great, while imports grew more rapidly from year to year. Labour was in demand and immigra-

tion trebled. Ships carried good freights. Corporations and States resumed payment. Rail-roads and canals made good dividends. The national revenue increased in its ratio to population, from year to year, and the time was fast approaching when it would become necessary to abolish every interference with trade, except so far as was required for the direct purpose of protection, as had been found to be the case fourteen years before, when coffee and tea were freed from duty. The authors of the tariff of 1842 could ask and confidently ask—Has any pledge remained unredeemed? To this, the planter would have answered—"Cotton is still very low in price. Your tariff has not raised it." To this, the answer would have been—"You have been favoured with four seasons in which the average crop has exceeded by 500,000 bales that of the previous years, and we have done for you all the time allowed in extending the consumption from 270 to 550 thousand bales, but had you yourselves set your shoulders to the wheel—had you brought the loom to the cotton field—the domestic consumption might have been carried to 700,000 bales, and then you would not have had this cause of complaint. As it is, we have *sustained* the price of cotton, which, under these heavy crops, would have fallen thirty per cent. lower, but for the increase of domestic consumption." The farmer, too, would have replied, "Prices are still low." To this, the answer would have been, "Your crops have been immense, and we have provided for you a market among the producers of iron, and cloth, and coal, and among other manufacturers, and among the vast body of immigrants, for at least a hundred millions a year. It requires time to restore the proportion between the producers and the consumers, disturbed by the long years of the compromise act. Without the market we have provided, where would you have been? We have *sustained and advanced* your prices, which, without our aid, must have fallen almost one-half."

Thus far, the advantage would certainly appear to have been on the side of the advocates of protection. They had given no pledge that had not been redeemed, while their opponents had given no one that had not been forfeited. We may now look to the anticipations entertained, and the pledges given, by the advocates of the existing system.

The following is from the Report of Dec., 1845, which preceded the passage of the act of July, 1846, establishing that system:

"If cotton is depressed in price by the tariff, the consequence must be a comparative diminution of the product, and the raising in its place, to a great extent, hemp, wheat, corn, stock, and provisions, which otherwise would be supplied by the teeming products of the West. The growing West in a series of years must be the greatest sufferers by the tariff, in depriving them of the foreign market and that of the cotton-growing States. We demand, in fact, for our agricultural products, specie from nearly all the world, by heavy taxes upon all their manufactures; and their purchases from us must therefore be limited, as well as their sales to us enhanced in price. Such a demand for specie, which we know in advance cannot be complied with, is nearly equivalent to a decree excluding most of our agricultural products from the foreign markets. Such is the rigour of our restrictions, that nothing short of a famine opens freely the ports of Europe for our breadstuffs. Agriculture is our chief employment; it is best adapted to our situation; and, if not depressed by the tariff, would be the most profitable. We can raise a larger surplus of agricultural products, and a greater variety, than almost any other nation, and at cheaper rates. Remove, then, from agriculture all our restrictions, and by its own unfettered power it will break down all foreign restrictions, and, ours being removed, will feed the hungry and clothe the poor of our fellow-men throughout all the densely peopled nations of the world. But now we will take nothing in exchange for these products but specie, except at very high duties; and nothing but a famine breaks down all foreign restrictions, and opens for a time the ports of Europe to our breadstuffs. If, on a reduction of our duties, England repeals her corn laws, nearly all Europe must follow her example, or give to her manufacturers advantages which cannot be successfully encountered in most of the markets of the world."

The planter is here assured that the depression of the price of cotton is due to the tariff, and the pledge is given that upon the adoption of the new system, prices will so far rise that he will be enabled to go into its cultivation more extensively, obtaining more to sell, and at better prices. Unfortunately, however, he obtains less cotton, and to that alone is he indebted for better prices. In the two years of large crops (1847 and 1848), which followed the passage of the tariff of 1846, the average price was but about 6½ cents, and had the two succeeding ones been like them, giving almost an extra million of bales, the price would now stand lower than it ever yet has been. The four crops under the tariff of 1842 exceeded by more than two millions of bales (half a million per annum), the previous four, whereas the last four are not greater than their immediate predecessors by more than a hundred thousand bales per annum, while the domestic consumption, which in 1842 was but 260,000, had reached 600,000, thus diminishing by more than three hundred thousand bales the necessity for depending on European markets, and it is to this *diminution of dependence*, a consequence of protection during four years, and to *diminished production*, a consequence of the withdrawal of protection, that the present prices are due. It would be difficult, I think, to find in these facts any confirmation of the truth of the anticipations of the author of this passage. They are precisely those which produced the high prices of 1835 and 1836.

We are here told that agriculture, if freed from all restriction, will break down all "foreign restrictions," and we shall then feed the hungry and clothe the poor "of the densely peopled nations of the world." The measures proposed were adopted, and what progress have we made towards "feeding the hungry" of all those nations? The answer is found in the fact that our *exports* of food have diminished, while our *imports* have increased, and that there is now a prospect of a further diminution of the one and increase of the other, so that it may be doubted, if, in the current fiscal year, our *net* export of food will amount to even seventy-five per cent. of what it was at the moment this report was written. That, however, is not all. We were then prepared, to a large extent, to feed Europe in case of any extra demand, with rise of price, whereas we now are not prepared. Famine and potato-rot might now occur, and prices might rise to the point they reached in 1846–7, but they could draw from us no such supplies of food. Our exports diminish because the commodities for export are not produced, and prices are, therefore, higher than elsewhere in the world. Had we no tariff of protection for the farmer, we should import this year, of food, almost as large an amount as we exported last year, and as it is, the import will probably amount to several millions.

Again, we were told that a reduction of our duties must lead nearly all Europe to follow the example of ourselves and England, but as yet no step has been made in that direction. On the contrary, the effect of English action would seem to have been that of inducing the continental nations to cling more closely to protection, and the *Zoll-verein* raises its rates of duty, while France and Belgium promise no alteration in the direction of reduction.

In the same report, occurs the following passage:

"At least two-thirds of the taxes imposed by the present tariff are paid, not into the treasury, but to the protected classes. The revenue from imports last year exceeded twenty-seven millions of dollars. This, in itself, is a heavy tax; but the whole tax imposed upon the people by the present tariff is not less than eighty-one millions of dollars—of which twenty-seven millions are paid to the government upon the imports, and fifty-four millions to the protected classes, in enhanced prices of similar domestic articles.

"This estimate is based upon the position that the duty is added to the price of the

import, and also of its domestic rival. If the import is enhanced in price by the duty, so must the domestic rival; for, being like articles, their price must be the same in the same market."

So large an amount of taxes must, of course, have greatly enhanced the cost of the articles taxed, and to a corresponding extent diminished their consumption, to correct which, *and to facilitate the power of purchasing these heavily taxed commodities, the tariff of* 1846 *was passed.* What, however, has been the result? The consumption of iron, which had trebled under the tariff of 1842, has diminished one-fourth, notwithstanding an increase of population amounting to more than three millions, and notwithstanding a lapse of time in which it should and would almost have doubled. The year now closed, would have seen more than a million and a half of tons of iron applied to the production of machinery for increasing production and improving transportation, yet the quantity so applied has not reached 750,000 tons. The consumption of cotton, which doubled under the tariff of 1842, has diminished in actual amount under that of 1846, and so has that of wool, while the consumption of coal, which trebled under the tariff of 1842, notwithstanding a tax which was supposed to add $1.60 to its price, has remained stationary, notwithstanding its application since that date to ocean navigation and other purposes, for which it was then unused.

The pledge here given has not been redeemed, nor can it be, and for the reason that, as a rule, in our trade with Great Britain, she pays the duty, and must pay it, however high, or abandon the trade, as will be admitted by every man of business who will study the subject sufficiently to make himself fully master of it.

The farmer who *must* go to a distant market, *must* pay the cost of getting there, let that cost be what it may. Diminish his tolls—give him a turnpike —a bridge—or a railroad car—and at each step his expenses diminish, leaving him a larger price for his potatoes and his wheat. Destroy the bridge, or interrupt the communication by the road, and his prices diminish. Renew them, and they rise again. He, and he alone, must provide the means and take the risk of going to market.

So is it with a manufacturer. Give him a monopoly of axe-making, and all must come to him to buy axes, paying their own transportation. Abolish the monopoly and establish competition over the country, and he finds himself compelled to *send* his axes, paying his own expenses of freight and commission, and obtaining, of course, diminished prices. The man who *must* seek a market, must pay the cost of seeking it, and his immediate neighbours profit by the distant competition in the lower prices at which they themselves are supplied.

England has placed herself in the position of being compelled to *seek* a a market, by steadily pursuing the policy reprobated by Adam Smith. She *must* go to market with her wares, and she *must* overcome the difficulties that stand between her and the market, and the cost of overcoming those difficulties is shown in the diminished prices at which she sells the wares which it is her pleasure to manufacture for all the nations of the world. She *did* pay them under the tariff of 1828 and under that of 1842, and she is now much relieved by having less to pay under that of 1846.

It is doubtful if any case can be found in which an increase in the tariff has been followed by any material advance in the price of the manufactured commodities subjected to the charge, *except where the foreigner had the control of the market,* and it is admitted that the change has invariably led to great reductions. Woollen cloths under the tariff of 1842 were much lower than under the low one of 1841–2—and all the difference, both of price and duty, was paid by the foreign manufacturer.

The price of iron is now very low in England, but it is far higher than it would be had the tariff of 1842 been maintained, and such is the case with her cottons and woollens, for go to market she must, and whatever the obstacles to be met on the way to market *she it is that must remove them*, precisely as is the case with the distant farmer. The tariff of 1846 was a boon to her, because it relieved her of the payment of taxes to a great amount, while at the same moment imposing upon our own farmers and our planters the necessity for paying an enormous amount of taxes in the form of transportation upon the food and the cotton for which before they had found a market at home. The total repeal of duties and the free admission of cloth and iron into our markets would relieve the British people from the payment of an immense amount of taxes to which they are now subjected, and the prices of iron and of cloth would both rise, because such a measure would stop every furnace and every mill in the Union, and Britain would then obtain a good price, subject to no taxation—whereas, the re-enactment of the tariff of 1842 would be followed by a fall in her prices of both cloth and iron, because of the necessity for paying the increased taxes. A total repeal, while relieving Britain from a large amount of taxes, would tax our own people to so great an amount that the consumption of iron would probably fall below even two hundred thousand tons; and that of cloth to a single hundred thousand bales—whereas the re-enactment of the tariff of 1842, would so far relieve them from taxes, that the consumption of iron would speedily reach a million and a half of tons, and that of cotton a million of bales.

It will, however, be said, that we pay in the market of England, exactly the same prices that are paid by her own people, and that therefore we *do* ourselves pay the duty. The farmer, compelled to depend upon a distant market for the sale of any portion of his products, can make no discrimination between the price at which he sells the small quantity he *must* send abroad and the large quantity he sells at home. He supplies his neighbours with corn at 12½ cents, because that is as much as it will yield him if sent to the distant market. Remove the obstruction that stands between him and market—give him a railroad—and the price to his neighbours rises, because of the increased facility of going to market with the small surplus. Whatever is saved out of transportation goes to the producer—the owner of the land—for the first thing that is to be paid by land is transportation, and that it must pay.

The manufacturer, forced to depend upon a distant market for the sale of however small a quantity of his goods, is in precisely the same situation. The price of the whole is fixed by the price at which he can sell the last portion, and thus it is that the raising of our duties forces the British manufacturer to depress prices to that point at which he can introduce here the quantity for which he *must* depend upon us for a market, and the same depression takes place in the price of all that is supplied to Germany, Ireland, India, or China. If, then, the planter desire to compel England to sell cloth cheaply, and thus increase the market for cotton, his true course is to have a high tariff here that will compel her to low prices there.

No material reduction of prices takes place in any thing, the monopoly of the production of which remains to England. It is only in those in which she is compelled to maintain competition, and the more vigorous the competition the greater is the reduction, as is shown by all the facts that have been exhibited. She *must* go abroad for a market. She *must* look to us for a market, and the more the difficulties interposed between her and this market, the greater must be the sacrifices made to reach it. Pay the duty, high or low, she must, or abandon the trade.

Precisely such is, and must continue to be the case, with our planters and farmers when they *must* go to a distant market, with however small a surplus. They must overcome the difficulties, and the larger the quantity to be sent, the greater are the difficulties, and the lower, consequently, are their prices. The tariff of 1846 increases their difficulties and diminishes those of England. It taxes them and frees Britain from a large amount of taxation.

Were we now to adopt the policy called by the name of "free trade" we should close all our mills and reduce our consumption to one hundred thousand bales per annum. We should thus have 500,000 more to sell, while the market for cloth would be reduced 400,000. What then would be the charge of England for converting the cotton into cloth? We now give five bales for one, but we should then give ten for one.

Were we, on the contrary, to adopt the system of *protection as the true and only road to perfect freedom of trade*, our consumption would speedily rise to a million of bales, and our own demand would rise with the rise of our own supply, giving us half a million less to send abroad for which to seek a market. That done, instead of giving five bales for one, the planter would give two to one.

The history of the world may fairly be challenged for the production of a body of freemen pursuing a course so impolitic as has been that of our cotton planters. It has tended everywhere to raise difficulties between themselves and the consumers of those products. Instead of bringing the spindle and the loom nearer to their cotton fields, and thus diminishing the friction between them and their customers, their whole policy is directed towards increasing the friction, *for all of which they have to pay.* After the next revulsion their crops will average three millions, and our consumption will probably be under 400,000, leaving 2,600,000 to go abroad. What then will be the friction, and how much it will leave them, they may calculate for themselves.

Were the additional cost of transportation all that the cotton planter had to pay, he might perhaps rest content, but such is far from being the case. The policy of England is, to compel all the cotton of the world to pass through a narrow strait, and the greater the obstacles in the way of its passage, the greater must be the pressure at the entrance, and the larger the price paid for permission to pass through, as is seen from the fact, that when we have large crops, and consequently large quantities to export, English profits are enormous, while the planter is almost ruined. Occasionally, we have small crops, and then her policy leads to the creation of obstacles to the passage of this small quantity we have to export, by an increased substitution of Surat cotton, and of flour made from Polish wheat, in place of cotton. This is now being done to a vast extent, as is seen in the fact that the total consumption of American cotton in the year now closed, has been under a million of bales, being but a trifle more than it was in 1837–8,* when the price was then, as now, about seven pence, and even if we deduct from the present consumption the *additional* yarn required by *the protected Zoll-verein*, the actual quantity consumed in all the countries dependent upon England for supplies is less now than it was then.

The object of the British monopoly system is to interpose between the consumer and the producer as many difficulties as possible, and the greater their number the larger will be the commission for removing them. By this course she impoverishes her customers, and diminishes their power of consumption, and increases her power over them.

She is now anxious to substitute flax for cotton, and thus interpose a new difficulty in the road to market of the planter, and the day is probably not

* The consumption of that year was 913,000 bales.

far distant when she will do it. What then will be the condition of the planter with all the machinery for raising cotton in his own hands, and all that for converting it in the hands of his enemies?

From the report of December 1847, I take the following passage:

"In my report of the 22d of July, 1846, it was shown that the annual value of our products exceeds three thousand millions of dollars. Our population doubles once in every 23 years, and our products quadruple in the same period—that being the time within which a sum, compounding itself quarter-yearly, at six per cent. interest, will be quadrupled—as is sustained here by the actual results. Of this three thousand millions of dollars, only about $150,000,000 was exported abroad, leaving $2,850,000,000 used at home; of which, at least $500,000,000 is annually interchanged between the several States of the Union. Under this system, the larger the area, and the greater the variety of climate, soil, and products, the more extensive is the commerce which must exist between the States, and the greater the value of the Union. We see then here, under the system of free trade among the States of the Union, an interchange of products of the annual value of at least $500,000,000 among our twenty-one millions of people; whilst our total exchanges, including imports and exports with all the world besides, (containing a population of a thousand millions,) was last year $305,194,260; being an increase since the new tariff, over the preceding year, of $70,014,647; yet the exchanges between our States, consisting of a population of twenty-one millions, being of the yearly value of $500,000,000 exchanged, makes such exchange of our country equal to $23.81 per individual, annually, of our own products, and reduces the exchange of our own and foreign products, (our imports and exports considered as $300,000,000 with all the rest of the world,) to the annual value of thirty cents to each individual; that is, one person of the Union receives and exchanges, annually, of our own products, as much as seventy-nine persons of other countries. Were this exchange with foreign countries extended to ninety cents each, *it would bring our imports and exports up to* $900,000,000 *per annum, and raise our annual revenue from duties to a sum exceeding* $90,000,000. An addition of thirty cents each to the consumption of our products exchanged from State to State by our own people, would furnish an increased market of the value only of $6,300,000; whereas, an increase of thirty cents each, by a system of liberal exchanges with the people of all the world, *would give us a market for an additional value of* $300,000,000 *per annum of our exports.* Such an addition cannot occur by refusing to receive in exchange the products of other nations, and demanding the $300,000,000 per annum in specie, which could never be supplied. But, by receiving foreign products at low duties in exchange for our exports, such an augmentation might take place. The only obstacles to such exchanges are the duties and the freights. But the freight from New Orleans to Boston differs but little from that between Liverpool and Boston; and the freight from many points in the interior is greater than from England to the United States. Thus the average freight from the Ohio river to Baltimore is greater than from the same place to Liverpool, yet the annual exchanges of products between the Ohio and Baltimore exceed by many millions that between Baltimore and Liverpool. The Canadas and adjacent provinces upon our borders, with a population less than two millions, exchange imports and exports with us less in amount than the State of Connecticut, with a population of 300,000; showing that, if these provinces were united with us by free trade, our annual exchanges with them would rise to $40,000,000. It is not the freight, then, that created the chief obstacle to the interchange of products between ourselves and foreign countries, but the duties. When we reflect, also, that the exchange of products depends chiefly upon diversity, which is greater between our own country and the rest of the world, than between the different States of the Union, under a system of reciprocal free trade with all the world, the augmentation arising from greater diversity of products would equal the diminution caused by freight. Thus the Southern States exchange no cotton with each other, nor the Western States flour, nor the manufacturing States like fabrics. Diversity of products is essential to exchanges; and *if England and America were united by absolute free trade, the reciprocal exchanges between them would soon far exceed the whole foreign commerce of both;* and with reciprocal free trade with all nations, our own country, with its pre-eminent advantages, *would measure its annual trade in imports and exports by thousands of millions of dollars.*

In my last annual report, and that which preceded it, it was proved that the home market was wholly inadequate for our vast agricultural products. We have long had, for grain and provisions, the undivided markets of our own people. But these are not sufficient; and in a single year we have, with abundance of food retained at home, supplied the world with an addition at once during the last year, as shown by

table AA, of $41,332,282 in value of breadstuffs and provisions, bringing the value exported that year up to $65,906,273. Our manufacturers could not have consumed this surplus, or their non-consuming machines, which are substituted in their workshops for the labour of man. If the energy of our own people can add $41,332,282 to the export and supply of our breadstuffs and provisions in a single year, what could they not add to such products if they enjoyed free of duty the markets of the world? By table BB, it appears that the augmentation of our domestic exports, exclusive of specie, last year, compared with the preceding, was $48,856,802, or upwards of 48 per cent.; and *at the same rate per cent. per annum of augmentation, would amount in* 1849, *per table CC, to* $329,959,993, or much greater than the domestic export from State to State. The future per centage of increase may not be so great; but our capacity for such increased production is proved to exist, and that we could furnish these exports far above the domestic demand, if they could be exchanged free of duty in the ports of all nations.

This estimate of increased *production* here given was based upon the wonderful progress made in the previous four years, during which, progress had been great beyond all previous precedent. To enable us to realise it, we have closed our mills, and mines, and furnaces, and compelled almost our whole population to resort to the production of food, or to remain idle. In accordance with it, our power to produce agricultural commodities suited for trade with foreign countries, should now have grown at least thirty per cent., and our present surplus for exportation should be almost double what it was in 1846. How stand the facts? We have less cotton, less tobacco, less rice, less wheat, less corn, less pork, less cheese, and less butter to sell than we had then, and we raise less wool and less hemp for consumption. Production diminishes, and it must continue to diminish until it shall come to be recognised that men labour most advantageously when they work most in combination with each other, as they did under the tariff of 1842—and least advantageously when they work least in combination with each other, as they do under the tariff of 1846.

The view here presented in reference to the power of extension of the domestic and foreign trade, is so singularly in opposition to those forced upon us by our daily observation, that it is commended to the careful attention of the reader. The extension of the one to the amount of $600,000,000 is regarded as being almost possible, while a similar extension of the other to an amount of $6,300,000, would seem to be presented as being what was possible. In all this calculation one essential element is omitted, and that it should have been omitted by a man of business is almost wonderful. It is this. To effect an increase of exchanges, there must be an increase of production of things to be exchanged. To effect an increase profitably to both parties, there must be an increase in the production of the things to be *received* in exchange, as well in those to be *given* in exchange. If the planter increases the supply of cotton faster than the manufacturer increases the supply of cloth, there will be "a glut" of the one and a deficiency of the other, and the quantity of cotton to be given for cloth will steadily increase, whereas, if the supply of cloth tends to increase faster than that of cotton, the quantity of cotton to be given for cloth will as steadily diminish. Every individual man knows this to be true as regards himself. The more numerous the grist mills, the smaller are the tolls for converting the grain into flour. Diminish the mills and tolls will rise. Diminish the supply of grain and tolls will fall.

All this is as true with regard to nations, as it is with regard to individuals. If the products of one nation increase, and those of others, with whom it finds itself *compelled* to maintain trade, do not increase, it must steadily give more for less, and from this there is no escape but in emancipating itself from the slavery of being compelled to depend upon that nation for supplies.

Our power of increase is here stated to be equal to a duplication of *production* every twelve years, which should give a duplication of our *surplus* every six years, giving in 1852 of

Provisions, say	$137,000,000
Cotton,	bales, 3,500,000
Tobacco,	hhds. 300,000

Where now are we to look for an augmentation of the production of things to be received in exchange for all these good things? Certainly not to China, for her progress is slow, and she has no anxiety for foreign trade. Not to India, for her power of production diminishes from year to year, and must continue so to do. South America produces for our use little but sugar. Canada has food to sell, and does not need to buy. Portugal, and Spain, and Italy, and Greece, manifest no tendency towards augmentation of their products, nor does France give reason to expect that she will make a large increase. Germany exports food, and raises much of her own tobacco, and her increase of commodities with which to pay for either tobacco or cotton must be slow while so large a portion of her population is compelled to spend the best portion of life in the unprofitable business of carrying muskets. Russia is the great exporter of food. Looking throughout the world, then, the British isles excepted, there is no evidence of any tendency to increase in the quantity of commodities to be *given* in exchange for commodities they would desire to *receive*, and therefore the only effect that would result from an attempt to increase our dependance upon them for supplies, would be that we must steadily give *more* food, cotton, or tobacco, for *less* of something else that we needed—an unprofitable commerce to either individuals or nations.

There remains now for examination, the United Kingdom of Great Britain and Ireland. Has her power of production increased, or is it likely to increase so as to enable her to give us value for this immense mass of products of which she is to be made the great consumer or distributer? To judge of the future, we must look to the past. If it has increased, it will continue to increase at an accelerated pace. If it has decreased, each year will see an acceleration of the rate of decrease.

In the first four years of this century, the domestic exports of that country averaged *thirty-nine millions* of pounds sterling. In this were included, of foreign cotton, silk, wool, dye-stuffs, and other materials of manufacture, *and foreign grain*, an amount of scarcely more than seven millions sterling, leaving, as the net export of *British labour and its products*, about thirty-two millions sterling, applicable to the purchase of tea, coffee, cotton, silks, and other commodities for domestic use. The population was about fifteen millions, and the amount per head was therefore above £2, or more than $10.

In the years from 1815 to 1819, the annual average of exports was *forty-four millions of pounds*, of which not less than twelve millions were needed for the foreign raw materials required for their production, and for the foreign grain consumed by her manufacturing and mining population. The balance, thirty-two millions, was now to be divided among a population of twenty-one millions, giving to each about £1 10*s*., or $7.20, for the purchase of foreign commodities for consumption.

From 1827 to 1834, the exports averaged *thirty-eight millions* of pounds, and the quantity of foreign raw materials and foreign grain required for their production was not less than fourteen millions, leaving twenty-four millions as the export of the labour and products of twenty-three millions of people, and giving to each 21*s*., or $5, for the purchase of foreign commodities for consumption.

In 1849, the exports amounted to about *sixty millions*, in the preparation of which had been required of foreign raw materials, foreign grain, and other articles of food with which Great Britain supplied herself entirely in all the former periods, considerably more than forty millions of pounds, leaving certainly not more, and probably much less, than twenty millions, as the actual export of British labour and its products, and giving to each person about 12*s.*, or $2.88, to be applied to the purchase of tea, coffee, sugar, cotton, silks, and other commodities, the same precisely to which, in the earlier years of the country, the amount to be applied exceeded £2, or $10.

To the sums here given are of course to be added the earnings of British shipping, which have varied in nearly the same order as the exports of British labour. In the first period they were very large. In the second, they were considerably less. In the present one, notwithstanding the vastly increased quantity of shipping, it may be doubted if the actual amount earned is as great as in the first, and as that amount had to be divided among a double population, it follows that the sum for each, resulting from the profits of navigation, is about half as much in the last period as the first.

There are also to be added commissions, and charges of every description, which increase in amount as "gluts" become more frequent, and "stock on hand" increases. The amount of taxation upon the farmers and planters of the world, to be found under this head, is probably four times as great as it was in the first period, and makes large amends for deficient production of things to be exchanged.

It is supposed that, "if England and America were united by absolute free trade, the reciprocal exchanges between them would soon far exceed the whole commerce of both;" but we here see that the productive power of England has diminished from year to year, while "free trade," even so far as it has existed, has enabled her to fix the prices of all of our staples *that she desired to buy*, and all of her staples *that she desired to sell*, leaving to us no option as to how we would buy or how we would sell. The more we sent her, the less she gave us for it; for the larger was the stock on the land, and the larger were the deductions. In the period from 1815 to 1819, one hundred millions of pounds of cotton sent from the plantations would have brought back more iron than six hundred millions in 1845–6, and yet the manufacture of iron had been improved in the intermediate period far more than the culture of cotton.

Absolute free trade between the two nations would close every mill and furnace in the Union, without an exception, and thereafter England would still more effectually dictate the laws of purchase and sale. Thereafter the cotton planter would be allowed two cents per pound, and the price of iron would be £10. It is really singular that the advocates of what is called "free trade" do not see that what England is contending for is the power to compel all the raw produce of the world to be sent there, that she may fix the price at which she will buy, and also fix the price at which she will sell. Protection is an act of resistance to this exercise of power, and tends to enable the farmers and planters of the world to trade on equal terms with the world for their cloth and iron, and therefore it is that trade grows in amount under it, while it withers with every approach to what in the Manchester system of political economy is called "free trade."

The British policy has been gradually exhausting the nation and diminishing its productive power, and therefore it is that it is driven to the effort to *compel* all the world to come there with their products, *to have the prices fixed in accordance with the ability of her people to pay for what they need.* That ability has diminished rapidly, and therefore it has been that the planters have been compelled to give more and more cotton, sugar, and tobacco,

for less and less cloth and iron, while the amount of freight, commissions, brokerage, and storage, to be paid on the steadily increasing quantity of raw products, has been constantly increasing, until throughout the world they have been almost ruined.

The radical errors in all these reports are two. The first is, that of the idea of the existence of any thing like *territorial* division of labour, except that which results from difference of climate. Wheat requires a northern climate, and cotton and sugar seek a southern one; but the man who grows the wheat is capable of converting it into flour; and it would not be more absurd to send the wheat to a distance to be ground, or the trees to be sawed, than it is to send the cotton to be spun, or the sugar to be refined. Under a natural system of real free trade, each country would exchange its products with each other in the most perfect form, so as to save transportation. Under the British system, each is *compelled* to exchange in the most imperfect form so as to increase transportation; and as all that cost *must* be paid by the land, we may now see why it is that the farmers grow rich and increase their products under protection, which tends to diminish transportation, and become poor under the British system, mis-called free trade, which tends to increase it. How far these views correspond with those of the great apostle of free trade, may be seen on a perusal of the following paragraph from the *Wealth of Nations*:—

"An inland country, naturally fertile and easily cultivated, produces a great surplus of provisions beyond what is necessary for maintaining the cultivators; and on account of the expense of land carriage, and inconveniency of river navigation, it may frequently be difficult to send this surplus abroad. Abundance, therefore, renders provisions cheap, and encourages a great number of workmen to settle in the neighbourhood, who find that their industry can there procure them more of the necessaries and conveniences of life than in other places. They work up the materials of manufacture which the land produces, and exchange their finished work, or, what is the same thing, the price of it, for more materials and provisions. They give a new value to the surplus part of the rude produce, by saving the expense of carrying it to the water-side, or to some distant market; and they furnish the cultivators with something in exchange for it, that is either useful or agreeable to them, upon easier terms than they could have obtained it before. The cultivators get a better price for their surplus produce, and can purchase cheaper other conveniences which they have occasion for. They are thus both encouraged and enabled to increase this surplus produce by a further improvement and better cultivation of the land; and as the fertility of the land has given birth to the manufacture, so the progress of the manufacture re-acts upon the land and increases still further its fertility. The manufacturers first supply the neighbourhood, and afterwards, as their work improves and refines, more distant markets. For though neither the rude produce, nor even the coarse manufacture, could, without the greatest difficulty, support the expense of a considerable land carriage, *the refined and improved manufacture easily may*. In a small bulk it frequently contains the price of a great quantity of the raw produce. A piece of fine cloth for example, which weighs only eighty pounds, contains in it the price, not only of eighty pounds of wool, but sometimes of several thousand weight of corn, the maintenance of the different working people, and of their immediate employers. The corn, which could with difficulty have been carried abroad in its own shape, is in this manner virtually exported in that of the complete manufacture, and may easily be sent to the remotest corners of the world. In this manner have grown up naturally, and, as it were, of their own accord, the manufactures of Leeds, Halifax, Sheffield, Birmingham and Wolverhampton. Such manufactures are the offspring of agriculture."

"In a small bulk it frequently contains a great amount of raw produce." This is in accordance with common sense. A thousand pounds worth of cutlery contains food, fuel, and iron ore, that could not in their natural condition have travelled five hundred miles, and yet in their new form they may be sent to the most remote parts of the earth; and therefore it is that the power to trade grows under the system that looks to compressing the raw

materials into the smallest compass, so as to fit them to travel to distant lands. Adam Smith was a true philosopher. His successors of the English School have inherited from him nothing but the power to use his name, and abuse the influence which it has given them.

The second of these errors is, that it is advantageous to place ourselves in a position to be compelled to exchange labour for labour with men whose labour is cheap. No man does this in private life. If *compelled* to exchange with the common labourer, the learned Advocate would find it difficult to obtain even day's labour for day's labour. If free to select those with whom he exchanges, he gives the labour of an hour for that of a week or a month. So is it with nations. If they place themselves in a position to be *compelled* to exchange with poorer nations, they must often give much labour for little labour, as is the case at this moment in our trade with Britain, in which we give *at the least* the labour of five days for the labour of one, and the longer we shall permit her monopoly to exist, the more shall we give and the less shall we receive, for the productiveness of her labour diminishes from day to day as men become *cheaper*, and the desire more exists for expelling them from the land to seek a refuge in the lanes and alleys of Glasgow, Liverpool, and Manchester.

Both of these errors had their origin among the Manchester School of Political Economists, and they are now transplanted to this country, every fact of whose history is in direct opposition to them. Being false, it is not matter of surprise that the system of policy founded on them should prove destructive of the powers of the nation. The policy of 1842 looked to the establishment of competition between men of equal and constantly-increasing powers. That of 1846 seeks to produce a necessity for competition with men of inferior and constantly-diminishing powers. The one tends to elevate man in the scale of civilization. The other to sink him into barbarism.

With the report of 1847, there was furnished a statement showing the growth of tonnage that might be anticipated under the new system. It was as follows :—

June, 1848	3,145,993	June, 1853	5,257,254
" 1849	3,486,075	" 1854	5,825,563
" 1850	3,863,920	" 1855	6,455,306
" 1851	4,281,550	" 1856	7,153,124
" 1852	4,744,386	" 1857	7,926,377

How far this anticipation has been realized, will be seen on an examination of the following statement of the actual growth of the navigation of the Union :—

1847–8	3,154,041
1848–9	3,334,015
1849–50	3,535,054

In 1849, the growth should have been 344,000 tons, and it was 180,000. Last year it should have been 377,000, and it was 201,000.

At the time of the publication of the report of 1847, the gold mines of California had not been discovered. They have since furnished employment to probably 400,000 of tons, and to that employment alone it has been due that any additional shipping has been needed. If we deduct from the total quantity now existing that which exists by virtue of this chance discovery of employment, we shall find that instead of the promised increase of 700,000 tons, there has been none whatever to set off against an increase of at least 600,000 tons under the tariff of 1842; and if we inquire into the prospects of ship owners, we shall find that they have rarely been worse

than at present, whereas in 1846 they were better than they had almost ever been.

The pledge of increase in shipping has not been redeemed, and for the single reason that it was based upon an error, as to the means by which shipping might be increased. The nation that sends to market raw products to exchange for finished ones, must pay the whole cost of transportation, because it sends to market five cargoes for one that it receives, whereas the nation that finishes its products and sends them to market in the form in which they can be consumed by the producers of other raw products, wool, sugar, coffee, tea, or other bulky articles, pays little freight. The difficulty under which we labour is that our exports are bulky and our imports compact. Protection tends to lessen this difference, because it tends to enable us to finish our products, and because it gives us a return freight in the form of immigrants. Under the tariff of 1842, immigration trebled, whereas under that of 1846 it has become stationary, with a tendency to decline, and thus homeward freights diminish as production diminishes, and small exports of food, cotton, and tobacco, are accompanied with diminished import of the more valuable commodity, *man*, of which, with adequate protection to labour, we could import a million annually.

The year 1847–8 did not realize any of the anticipations that had been made in 1847. Our export of food diminished, and specie was exported to take its place. Nevertheless, in the report of 1848, we were assured that the export of food "must go on augmenting," and that "all this specie must soon come back to our country, except so far as it is lost by foreign bankruptcy."

This report, like its predecessor, is filled with anticipations of the wonderful effects that must result from the adoption of the new system, but it is not necessary to trouble the reader with more than the two above referred to, in regard to the first, of which we know that the export of food has already fallen almost one-third, with promise of a fall in the present year upon which we are now entering, greater than in any which has preceded it; and in regard to the second, of which we know that we have not only continued to export specie from that day to the present, but that we have also exported at least eighty millions of certificates of debt, on which we have to pay interest, and the principal of which we shall be called upon to pay at a time when it will be sure to be very inconvenient.

Throughout these reports it is everywhere insisted upon that our surpluses of food are so great, and must continue so rapidly to increase, that it would be absurd to think of making a market for them at home. We, however, have now evidence that the surpluses may be largely diminished by the very simple process of producing a state of things that causes large emigration to the West, there to create new farms and plantations, and large demands for roads, the farms and roads being made by the men who would otherwise have been occupied in producing food or cotton, coal, iron, or cloth. The difference between the two systems, those of 1842 and 1846, is this. The first tended to render existing machinery, whether farms, mills or furnaces, largely productive, to increase production, to increase the facility of obtaining food and clothing, and ultimately to make a market on the land for all the vastly increased quantity of the products of the land. The second tends to render existing machinery unproductive, as it has already done to the extent of hundreds of millions of dollars—to drive labour and capital to the production of new and less productive machinery—to diminish production,—to diminish the facility of obtaining food and clothing—and ultimately to destroy the market on the land for even the diminished amount of the products of the land. The first fostered the great home trade, the

only possible foundation upon which a large foreign trade can ever be built. The second annihilates the home trade, in the hope to build up a foreign one, and with each step in its progress, we have less to sell, and consequently less power to buy. Adam Smith taught all this, and it is the basis of his whole system, but his successors in his own School have repudiated him.

Such were the promises of the men of 1846. Not a single one has been redeemed. Let them be compared with the promises of 1842, and let it then be shown what was the promise then made that was not realized.

It will be said, however, that it promised revenue, and that that promise has been performed, but the time has not yet arrived for testing the performance of that pledge. The compromise gave surplus revenue in its first four years, and so has done the tariff of 1846. The compromise gave almost no revenue, as its second four years approached its close, *and such will be the case with the second term of the tariff of* 1846. Both of these free-traders have traded upon the credit built up by their predecessors. The first broke down after having exhausted that credit, *and the second will do so.* The time for testing this pledge will be about 1852–3 or 1853–4, after the next convulsion, when, as in 1841, we shall have much to sell and no market to sell in, and much to buy, and neither money nor credit with which to buy.

It would seem to be incumbent upon the advocates of the existing system to explain why it is that their promises have not been redeemed—why it is that as we produce less iron we have less power to supply food—why it is that as cotton mills are closed the production of cotton, sugar, rice, tobacco, and hemp, all Southern products, diminishes with such rapidity. Under the tariff of 1842, we increased the proportion of our population engaged in mining and smelting ore, mining coal, and making cloth, and largely increased the population engaged in the construction of machinery, the opening of mines, the building of mills and furnaces, and yet the productiveness of agricultural labour increased more rapidly with every step towards making a market on the land for the products of the land. Under that of 1846 we have immensely increased the proportion of our agricultural population, and yet the productiveness of agricultural labour diminishes as we close the domestic market for its products.

The friends of the present system denounce the idea of protection as "obsolete." It is one of the "exploded fallacies," and they deem unworthy of attention any argument in its favour. To all such I would beg to recommend a perusal of the following short extract from a recent work of much merit:—

> "To know while any thing is taking place, what *must* follow—in other words to know the necessary consequence of what is going on at the present moment—that is science. To know when any thing has occurred, what *must* have preceded, in other words, to know the necessary antecedents of what has occcurred—that is science."*

The advocates of the tariff of 1828, and the advocates of that of 1842, predicted increase of production, increase of commerce, and increase of national wealth, credit, and power, as the results of their measures, and their predictions were realized.

The advocates of the measures of 1833, predicted *greater* increase of production, *greater* increase of commerce, and *greater* increase of national wealth, credit, and power, and the result was a vast diminution of production and commerce, and national impoverishment, followed by national weakness and discredit.

The advocates of the measures of 1846 made the same promises. Thus far the results have been the same, and they are to be the same.

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* Introduction to the Study of the Social Sciences.

If, now, science consists in knowing when any thing is taking place what *must* follow, it would seem that the real scientific knowledge was on the side of the advocates of the system of 1828 and 1842, for they did know what *must* follow, and did predict what would follow, and their predictions were more than realized. It is time that the advocates of what are called "free-trade" measures should lay aside their assumption of superior knowledge, and study the political economy of Adam Smith.

We are now entering upon the second term of the present system of policy, and the reader has had before him the pledges given in reference to both it and its predecessor. The one having proved a failure, we have reason to suppose that the other may do so likewise. That it will do so, and that the only difference will be that the failure will be more complete, I propose now to show, putting on record my predictions of the next four years, that others may have an opportunity at the close of the term to review my anticipations as I have reviewed theirs, and to expose my errors as I now exhibit theirs.

At the last session of Congress, an act was passed granting bounties in land to all persons who had served in the various wars in which the country had been engaged, from the Revolution to the present time. The quantity that will be required to meet the demands under this law is estimated at about ninety millions of acres, all of which may be regarded as a bounty on emigration from the old states to the new states and territories, at a time when, even without such bounty, the tendency to emigration was as great, and probably greater than ever had been witnessed, owing to the universally diminished demand for labour in all the Atlantic states.

Each and every man that emigrates, ceases at once to be a producer of any thing that can be eaten, worn, or used, while he continues to eat, drink and wear things that are produced by others. Each man that emigrates takes with him some amount of capital that has heretofore been employed in the production of things to be eaten, worn, or used, but from the time of its withdrawal it ceases to produce any thing, its owner applying it to the purchase of commodities required for the use of himself and his family while engaged in the preparation of the new machine that is to take the place of the one he has heretofore used, whether mill, furnace, mine, or farm.

With each and every person that emigrates there is increased difficulty in finding employment by those who are left behind. The closing of the mines compels the miners to emigrate, and thus diminishes the market of the neighbouring farmer for those bulky products of the earth which pay him best, but will not bear transportation to distant markets. It also closes up the demand for the spare labour of himself, his sons, his horses and wagons, and his timber, and thus compels the separation of the members of the family from each other, diminishing the power to clear and cultivate his farm, and ultimately to divide it into smaller portions, each one of which could, and would be made to produce more than is now produced by the whole.

Whatever, then, may be the ultimate result of an increase of emigration, the immediate effect is, necessarily, a diminished amount of production by *both labour and capital*, and that diminution cannot be estimated at less than five hundred dollars per head for each man, married or single, and it would be safe to place it higher. The emigration of the past year has been very large, but having now offered a bounty upon its increase, we may safely estimate that that of the present and future year will be much larger, and if we take *the addition* at only twenty thousand per annum, the diminished production of commodities in consequence of this law, in this and the next year, will be twenty millions of dollars.

It is now proposed to grant to every head of a family in the Union a quarter

section of land, as a further bounty on emigration, and as "madness rules the hour," it is probable that such a law will pass, the consequence of which will be a vast further increase of emigration, and, consequently an enormous diminution in the value of all landed property in the already settled states, from the Mississippi to the Atlantic.

The perfect form of society is that in which the centrifugal and centripetal forces balance each other perfectly, and whenever either of these forces obtain the mastery, the inevitable effect is impoverishment, weakness, and ruin. The policy of England has been to increase the centripetal force within herself, and the consequence has been to increase the centrifugal one in all connected with her, impoverishing and destroying both herself and them. Ireland is likely to become almost depopulated. Much of Scotland* is already so, and the great object of desire in England is now the expulsion of population.

The policy of 1846 is centrifugal in its tendency. It looks to sending from the land all the products of the land, which is thereby exhausted. It looks to depriving the owner of the land of his market for its most profitable products, the potatoes, the turnips, the hay and straw, the veal and milk, and other commodities that will not bear transportation. It looks to confining him to the single pursuit of agriculture, and thus depriving him of a market for all the labour of himself and his family, his horses and his wagons, not needed on his farm. It looks to compelling the owner to emigrate after having exhausted his land. It looks to continuing the occupation of the land in large and unprofitable farms, instead of dividing it into small and profitable ones.

Including California, it has probably already compelled the transfer of not less than half a million of men from the older states to the newer ones—from places at which they were engaged in producing commodities that could be used in satisfaction of their necessities, food, fuel, cloth, and iron, to other places in which they are engaged in the creation of new machinery, requiring all the time to be fed, and clothed, and lodged, and that, too, at a cost that is terrific. The California emigrant eats the food of Chili, and sleeps in a house built of the lumber produced in New York or Maine, or perhaps Wisconsin. The emigrant to *Santa Fe* eats pork that costs for its transportation no less than *thirty-two dollars* per barrel, and he who goes to *Paso del Norte* eats that which has cost for its simple transportation no less than *forty-eight dollars*,† while his flour costs him about forty dollars. The half million of men thus scattered over the earth, aided by the capital that has been employed in placing them where they are, and maintaining them, were capable of producing food, cloth, iron, fuel and other commodities, to the extent of at least five hundred dollars each, making an aggregate of not less than two hundred and fifty millions of dollars in a single year; whereas, all the return as yet received from them will not pay for one half of the commodities furnished for their support by others, so that the whole of this vast sum constitutes a

* "It is becoming clear that nothing can relieve the poverty of the Highlands but the property of the Highlands. The people must be fed, in spite of mortgaged estates and laws of entail, and all other burdens whatsoever. The land must be free, that the people who till it may live. The Highlands require an Encumbered Estates Commission to cut the Gordian knot. Five years of famine in the Highlands have failed to clear off the wretched population. It now remains to be seen whether the land cannot be made to afford them some support."

† These are the government contract prices. How enormous is the cost of transporting and sustaining men in the remote districts to which they are now being driven, may be judged of by the following comparative view of the charges from the Quarter Master's Department in the four new departments of Oregon, California, New Mexico, and Texas, as compared with the rest of the Union:

New departments, $4,225,752. Old departments, $530,247.

deduction from the present power of the nation to produce commodities in which to trade, or with which to pay for those that we desire to purchase from other nations, and hence it is that we have now so little to export, and are running so heavily in debt.

Emigration produces a necessity for roads. The blocking up of capital from all employment in the construction or carrying on of mills, furnaces, or mines, causes capital to accumulate and enables speculators to obtain means for making roads. Each successive day brings with it advices of the closing of a mill, a furnace or a mine, and therewith come also advices of the increased abundance of money, or unemployed capital, for which there now exists no outlet whatever, except in road-making. Road makers, however, produce nothing that can be eaten, drunken, or worn, and yet they must eat, drink, and wear, and those at whose command the roads are made must supply the food, the clothing, and the lodging which constitute the wages of the men by whom they are made.

The railroads now in progress of construction throughout the country amount to many thousands of miles—probably six or eight thousand.* The tables of almost every legislative body in the Union, at the coming sessions, will be covered with applications for new ones, while charters for plank-road companies will be asked for by hundreds. Every state, city, and town, and almost every town and township, is now ready to use its influence or lend its credit for obtaining the means of feeding, clothing, and lodging the people who are needed to secure that which has become the one great and absorbing object—a good road to market—and bonds of every kind are forthcoming, to be used in the purchase of the necessary iron. The aid of Congress, too, is invoked, and it listens readily to the application. The last session witnessed the granting of a large bounty on the making of a road from Illinois to Mobile. The present one is likely to witness the passage of laws granting similar bounties for numerous other roads in the South and West, including a large one with which to commence the great road from the Missouri to the Pacific. Rivers and harbours are to be improved at a cost of some millions. The older states, too, are asking for a share in this new and grand distribution of lottery prizes. Pennsylvania has already claimed some millions of acres, and other States are following her example. If, now, we add all those things together, it can scarcely be doubted, that in their various forms they present an aggregate equivalent to not less than fifteen thousand miles of railroad, which, at an average cost of $18,000 per mile, would be equal to two hundred and seventy millions of dollars, every farthing of which must consist of labour diverted from the production of things that might be consumed at home, or exchanged for things abroad, and applied to the making of machines upon which things are to be carried, and which can neither be consumed at home nor exchanged abroad.

This, however, is not all. Congress is besieged with other applications. One desires the fitting out of the Pennsylvania, at a cost of several hundred thousand dollars, as a national contribution to the new British show-shop, the object of which is to induce the people of the world to come to England and spend their time and their money. Another claims an appropriation for a line of steamers to Antwerp or Havre. A third would have lines from Philadelphia or Baltimore to Liverpool. A fourth desires a few millions for a line to carry the emancipated slaves of America to the coast of Africa, and to bring the Irish slaves of Britain to America, and that too at a time when the inducements to immigration are rapidly disappearing. A fifth would have a line of steamers from San Francisco to China. Tehuantepec, and the Isth-

* Those of Ohio and Indiana alone amount to nearly two thousand.

mus, and the Nicaragua Canal come in for their respective shares of attention, and the claims of each and every of them are pressed upon the national attention as being indispensable to the extension of trade, when with each step in that direction, there is a diminution in the production of things in which to trade. The less cotton we raise, the greater is held to be the necessity for roads. The less food and tobacco we export, the greater is thought to be the need for ships. The less foreign merchandise we are able to pay for, the more, as it seems to be thought, is the duty of providing steamers by which to bring it.

Another set of speculators has Canada in charge. That country is poor and her lands are of little value, while those of the Union close to the line are valuable. The one has no market for her products, while the other has. Canada desires to raise the price of her land and labour to a level with those of the Union. She has friends within the Union who are willing to depress ours to a level with hers, by the passage of an act permitting the Canadians to sell their food and their wool within the Union and to buy their cloth and their iron out of it, thus granting them all the rights of citizens, while imposing upon them the performance of none of the duties of citizenship. The passage of this act will largely promote the transfer of labour and capital to Canada, and largely diminish the productive power of the Union, and in return for this sacrifice we are offered a new road to market, the St. Lawrence, the use of which its present possessors are now rapidly abandoning. Diminution of production and diminution of the value of land and labour are, however, held as nothing when compared with obtaining more roads by which to carry to market that diminished product. It is madness only to be paralleled by that of England in 1846, and

> "Each, where madness rules the hour,
> Would prove his own expressive power"—

by endeavouring to satisfy his hearers in and out of Congress, that it matters little the closing of furnaces and mines, or the abandonment of farms and plantations, provided only, that roads and steamers be provided in sufficient number.

If we now take the quantity of labour withdrawn from production at home to the creation of new farms, plantations, and states, in the West, and likely to be further withdrawn as the bounty land system comes further into operation—the quantity withdrawn and likely to be withdrawn for the creation of this immense system of roads—the number of persons now thrown absolutely idle in consequence of the closing of mines, furnaces and mills,—the diminished production among farmers consequent upon the withdrawal of a demand for the more bulky products of the farm—the diminution consequent upon the annihilation of the productive power of seventy, or eighty, if not a hundred millions of dollars invested in mills, mines, and furnaces,—and the further diminution consequent upon the transfer of capital and labour to Canada, Mexico, the Isthmus of Panama, and Nicaragua—it would seem impossible to doubt that there must be in the next and following years a diminution in the power to produce commodities for consumption or exchange, to the amount of a thousand millions of dollars, or five hundred millions of dollars per annum, being one-sixth of the total production, estimated by Mr. Walker three years since, and perhaps one-fourth of the true amount of production, which does not probably exceed two thousand millions of dollars.

How is this diminished production to become obvious? We already have little food to sell, and every transfer of labour from the production of food to the creation of new machinery, must lessen the quantity. If all these

works are to go on, the supply of food must be greatly diminished, and instead of exporting, as now, more than twenty millions of it, the probability is that we shall see the exports diminished to some eight or ten millions, while we shall import largely, as we did in 1836, and as Great Britain did in 1846. Prices will then be high, and with every increase there then will be diminished power on the part of the labourer to obtain food, with still more rapid diminution in the power to purchase either cloth or iron. The farmers will temporarily profit in the price of food, as they did in 1836, but the ultimate result must be the same. They will lose five dollars in the diminished value of land, for one they will gain in the price of food. Cotton and tobacco planters will also benefit temporarily, at the cost of the consumers of cotton and tobacco. Wages, estimated in articles of consumption, must fall greatly, and immigration will diminish to the severe loss of ship owners. The capitalist will experience a daily diminishing power to invest his capital safely at the ordinary rate of interest, and thus it is that the war upon labour and capital will be made.

With the diminution of the power to invest capital to advantage, there must be an increasing tendency to its accumulation in banks, unproductive to its owners. With every day, the demand for stocks from Europe must increase. In the last half year, our imports have reached, as it is understood, about *one hundred and fifteen millions*, and the debt accumulated against us last year must have exceeded fifty millions, of which about fifteen millions were required for the payment of interest. This year we shall probably go in debt sixty or seventy millions of dollars, for we shall have less to sell and more to buy than in any previous one, and the close of the year will probably see us with a debt of three hundred and fifty millions, involving the payment of more than twenty millions annually for interest. With each transfer of stock, and with each step in the progress of diminution in the power to invest capital safely and profitably, the price of good stocks must increase among ourselves, until at length they attain a point higher than they will command in the foreign market.* Their export must then cease, and the demand for specie must then arise. Our silver is, to a great extent, already gone. Gold must follow, and the demand for only a few millions will open the eyes of bank directors to the fact that they are trading to a vast extent upon the funds of others who will now be able to use them for themselves. Discounts at bank will diminish, and note holders will be forced into the street to obtain at twelve, fifteen, or twenty per cent. the means of executing contracts made when the rate of interest was but five. Then will come THE REVULSION, and then will disappear the "prosperity" of which we now so fondly boast, and how rapidly the one will replace the other may be judged of by those who witnessed the change between the commencement and the close of March, 1837. The few will then grow rich, and the many will then be impoverished. New York, as the centre of speculation, will, as in 1837, first feel the shock, but thence it will gradually expand itself until it shall be felt throughout the Union, and all shall feel themselves involved in one common ruin, the result of the policy of 1846.

* How soon this state of things will occur it is not for me to predict, but the following passage from the *New York Herald* of Jan. 4, would seem to indicate that it could not be very far distant:

"The spirit of speculation is rapidly extending itself, and speculators are becoming more abundant every day. Prices are advancing with rapid strides, and there appears to be no limit to transactions. There appears to be more anxiety to buy at present prices than when the market ruled ten per cent. lower. All the leading fancies have advanced more rapidly during the two past days than at any previous period during our recollection."

Road makers will then discover that while the roads have been doubled in extent, the quantity of commodities to be transported has been reduced to little more than one half, and that with diminished immigration and emigration the passage business can contribute but little towards dividends. Road-making will then cease, and the half finished roads will pass into the hands of their creditors. Ship owners will then discover that canal-boats, and sloops, and schooners, which furnish aliment for ships, have been steadily diminishing in number. Farmers will cease to have a market for their products among the makers of roads, and will look in vain around in quest of the great market they once enjoyed among the prosperous miners of coal, smelters of iron ore, and manufacturers of cotton and of wool. Wool will then go to Europe in search of the market that has been destroyed at home. All will seek to produce, and production will then increase, and then again shall we see low prices—lower probably than we ever yet have seen, for the new lands now being forced into cultivation will then begin to give forth their crops to the ruin of the farmers of the older States. The planter will then cease emigrating and try to produce something to sell, and then again he will have large crops, with prices lower than he yet has seen.* He will then cease to rejoice in short crops and high prices. The average crop of the four years, from 1842 to 1846, exceeded by 70 per cent. the average of those from 1832 to 1836. Such an increase from 1852 to 1856 would give 3,750,000 bales, but taking it at 3,500,000 bales,‡ with a domestic consumption under half a million, there will probably be three millions for which to seek a market abroad. At present prices, Great Britain can take a million. At fourpence halfpenny a pound, she can consume about twelve hundred and fifty thousand. At what price she will take two millions time alone can determine, but the planter will have reason to rejoice if he obtain within thirty per cent. of the lowest prices he has yet seen.

With the diminished prices of produce the power to purchase foreign commodities will diminish, and towns and cities will find themselves hopelessly in debt for the construction of roads that are valueless when compared with the cost at which they have been constructed. All will then discover that "competition" has led to *doubling* the roads while *halving* the trade. States will then find it difficult to collect taxes, and the Committee of Ways and Means of the Union will be called upon to show how with a revenue of twenty millions they are to provide for an expenditure of fifty. Poverty at the North will contribute to the spread of the anti-slavery feeling, and poverty at the South will cause the increase of the pro-slavery feeling, and we shall then perhaps be ripe for a dissolution of the Union. Such is likely to be the course of events at home, while abroad vituperation of every thing American will become as common as it was 1842, and such will be the closing chapter of the policy of 1846.

If the reader doubt the correctness of these anticipations, I would request him to study the history of 1836, and try if he can find, in what is now transpiring, any one fact that does not correspond with what then occurred. Let him next study the history of England in 1846, and see the effect of

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* We are now under Southern policy, building up Nicaragua, perhaps to be a rival to Southern planters in the production of their great staple.

"A person in Nicaragua writes that cotton may be cultivated there to any extent, though the want of energy in the inhabitants has reduced the production to a very small quantity. In a single year as much as 50,000 bales, of 300 pounds each, of clean and excellent quality, have been exported."—*Daily News.*

† The excess of the crops of 1842 to 1846 over that of 1837–8 was about twenty-five per cent. A similar excess of these four years over the crop of 1847–8 would give above 3,400,000.

the road-making mania there, and then let him read the New York Herald for the opinions there expressed in regard to the conduct of nearly all the merchants of England to whom our citizens were so unfortunate as to consign cargoes, or for whom they were so indiscreet as to make purchases. Like causes produce like effects. *In writing the history of* 1852, *I have only re-written our history for* 1841.

The radical error of the British system, which it is the object of that of 1846 to establish amongst us is, that it is opposed to the first and best feelings of man, the love of association. Man seeks to combine his efforts with those of his fellow man, whereas that system looks to preventing all such combination. It would separate the saw-miller and the grower of timber by thousands of miles. It would compel the farmers of the world to carry their wheat to England to be ground. It *did* compel the planter of India to send his paddy to England that it might there be converted into rice. It does compel the cotton and wool growers of the world to send their products thousands of miles that they may there be spun and woven, and the sugar planter to send his sugar that it may there be refined. It seeks everywhere to destroy the power of association by separating the producer from the consumer of his products, and to compel the farmer to pay all the cost of transportation. It limits the consumption of iron, and thus impedes the advance of civilization. It compels the farmer and the planter to waste on the road the manure that should be returned upon the land. It compels hundreds of thousands to be idle where they should be employed. It has destroyed the productive powers of its colonies. It has made of Ireland one vast ruin. It has destroyed and is destroying Scotland, and of England itself it is gradually making one vast mass of poverty, demoralization and crime. The object of the tariff of 1842 was the destruction of the monopoly to which these effects are due. It sought freedom of trade in the only direction in which it can ever be found. It sought to raise the condition of our people, and to promote the immigration of Europeans who should be raised to a level with our own. The object of the tariff of 1846 is the perpetuation of the monopoly which seeks to maintain itself under the cry of "free trade." It seeks to sink our people to the level of those of Europe, and it destroys the inducement to Europeans to seek our shores, compelling them to remain slaves when they would become freemen.

The object of the tariff of 1846 and that of the universal British system is that of establishing "competition" and rivalry, leading to the destruction of the productive powers of man. The object of protection is to obtain for mankind the permission to combine their efforts for the increase of their pro ductive power and the improvement of their common condition. The one looks outward, and all its movements tend to war and heavy expenditure. The other looks inward, and leads to peace and moderation of expenditure for governmental purposes. The one looks to building up a great monied aristocracy like that of Britain, while the other looks to the extension of sound democracy—perfect self-government.

If we would desire that we ourselves should enjoy freedom, whether of land, labour, or trade, we must seek it in the direction of efficient and perfect protection, and such will probably be the decision of the whole people north of Mason and Dixon's line, after the convulsion of 1852. If we desire that the freemen south of that line should become rich and that the slaves should become free, our object must be sought in the direction of the tariff of 1842.

The productive power of the country was estimated by Mr. Walker, three years since, at three thousand millions of dollars, and its capability of increase at a duplication in every twelve years. According to this calculation,

it should now have reached thirty-six hundred millions, and yet, with all our vast increase of population we produce less of every thing required for the use of man than we did then—less cotton, sugar, rice, tobacco, hemp, wool, grain, cloth, iron, &c. Even had all remained stationary we should have here a loss of annual production equal to six hundred millions of dollars; but if to this be added all the vast reductions, how immense is the loss to the nation from the adoption of the policy of 1846!

To say that the nation is this day poorer by one thousand millions of dollars than it would now be had the policy of 1842 remained unchanged, would appear to be saying much, and yet it is a small amount compared with the truth. Had the manufacture of iron been permitted to extend itself, we should have used in the last four years at least a million, and probably a million and a half of tons that we have not used, and should now have throughout the country that quantity in the various machines of production, conversion, and transportation, and the reader may judge what would be the effect on the value of land and labour resulting from the existence of mills, furnaces, mines, roads, and other aids to labour, to that extent, and determine for himself if the difference in the value of the land alone would not be more than that sum.

Had the manufacture of cloth and iron and the mining of coal been permitted to advance as they were then advancing, we should now consume at home treble the food we export, and almost twice the cotton we now consume, and we may judge if the *additional* value thus given to food and cotton would not now count by hundreds of millions of dollars.

Had the demand for labour been maintained, we should have imported in the intermediate period at least twice the men we have imported, and should now have a million of people more than we have done, and it is man that gives value to land.

To the protective system we are bound to return, either in season to prevent a revulsion, or after having passed through it. If before, we shall stop short in our downward career, contenting ourselves with the losses already made. If after, it may safely be said that three thousand millions will not compensate for the losses resulting from the policy of 1846. That we must return to it must be obvious to all who will examine the facts and satisfy themselves that capital is becoming daily less and less productive, that labour yields a daily diminishing return, and that the power of producing the things needed for the support and comfort of man is in a steady course of diminution.

It remains for those who are intrusted with the law-making power to determine whether it shall be before or after, and upon the decision now to be made hangs probably the question of the continuance of the Union. Poverty produces discord and disunion, as has been seen in the growing pro-slavery feeling of one section of the Union, and anti-slavery feeling of the other, growing out of the troubles consequent upon the working of the compromise tariff. With another such revulsion, there will be increased bitterness of feeling, both North and South, and whether or not the Union can stand such a state of things, time alone can determine. That it cannot do so is my firm conviction, and as firm is the conviction that good feeling between the two portions of the Union can never be restored until the planter shall determine to avail himself of the advice of Adam Smith, in adopting energetic measures for bringing the machinery of conversion to the cotton fields and enabling himself to export cotton and food in the most compact form, and thus annihilating the power of England to fix the price of all she buys and of all she sells. That measure will diffuse real prosperity throughout the land, and with prosperity will come peace, harmony, and union, to be followed by real freedom of trade.

ANALYSIS OF THE ASHES OF THE SUGAR CANE.

MR. EDITOR—*My Dear Sir:* Knowing that some of your readers would take an interest in the following results upon the *ashes of the sugar cane*, obtained by Mr. STENHOUSE, I have been at the pains to condense them from a very valuable memoir published by this gentleman in a supplementary number of the London, Edinburgh and Dublin Phil. Magazine and Journal of Science (No. 183, Dec. 1845, p. 533), and herewith offer them to you, with a remark or two of my own, provided they meet your views.

SUBSTANCES.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Silica	45·97	42·90	46·46	41·37	46·48	50·00	45·13	17·64	26·38	52·20	48·73	54·59
Phosphoric acid	3·76	7·99	8·23	4·59	8·16	6·56	4·88	7·37	6·20	13·04	2·90	8·01
Sulphuric acid	6·66	10·94	4·65	10·93	7·52	6·40	7·74	7·97	6·08	3·31	5·35	1·93
Lime	9·16	13·20	8·91	9·11	5·78	5·09	4·49	2·34	5·87	10·64	11·62	14·36
Magnesia	3·66	9·88	4·50	6·92	15·61	13·01	11·90	3·93	5·48	5·63	5·61	5·30
Potassa	25·50	12·01	10·63	15·99	11·93	13·69	16·97	32·93	31·21	10·09	7·46	11·14
Soda		1·39			0·57	1·33	1·64			0·80		
Chloride potassium	3·27		7·41	8·96				10·70	11·14		16·06	0·84
Chloride sodium	2·02	1·69	9·21	2·13	3·95	3·92	7·25	17·12	7·64	4.29	2·27	3·83

Nos. 1, 2, 3 and 4 were very fine, full-grown canes from Trinidad, consisting of stalks and leaves, but without the roots; Nos. 5, 6 and 7 were similar canes from Berbice; No. 8 from Demarara; No. 9, of full-grown canes, but with few leaves, from the island of Grenada; No. 10 from Trelawny, Jamaica, consisting of transparent canes in full blossom, grown about six miles from the sea and manured with cattle dung; No. 11, of transparent canes from St. James's, Jamaica, growing about two hundred yards from the sea, being old rattoons, and also manured with cattle dung; No. 12, young, transparent canes three and a half miles from the sea, and manured with cattle dung, guano and marl.

From these analyses, it appears that the cane for successful cultivation requires a very large quantity of silicate of potassa and also a considerable amount of the phosphates. Few cultivated plants, except the cerealia, require so much. Wheat, or any of the cereals, necessarily causes the removal of a portion of the valuable inorganic constituents of the soil, such as the alkalies, phosphates, &c. which can only be returned to it indirectly; but with sugar the case is quite otherwise. Sugar is a purely organic substance, consisting of carbon and the elements of water, all of which can be derived from the atmosphere, and contains neither alkalies nor phosphates; so that if the ashes of the canes were carefully collected and returned to the soil in an available state, there is no reason why cane might not be grown upon the same lands almost indefinitely.

In the West Indies, where wood is scarce, the crushed canes are employed as fuel, under the coppers of the boiling-house, to concentrate the syrup, and as the heat required is great, a large amount of the silica and the alkalies present is converted into a hard, insoluble glass, which in this form being useless, is thrown away. We can therefore readily understand the reason of the rapid exhaustion of their sugar-lands, and the comparatively slow wearing out of those in Louisiana, where from the abundance of wood, the cane-trash is never thus employed, and where in addition to the inorganic ingredients of the cane, the soil receives (at least where the plantership is what it ought to be) the almost equally valuable mineral constituents of the wood itself.

Yours, very obediently, CHARLES UPHAM SHEPARD.

LONGEVITY IN HORSES.—The Marquis of Ramecroix has just lost an Arab mare, by death, which was sixty-three years old, but which of course had long been useless. Mr. Jesse Hill, of Cheddar, the steward of the Marquis of Bath, has a mare he is ready to prove to be in her fiftieth year. She is daily used in harness, her chief food being bran, potato rinds and grass.

OKRA:

SOMETIMES CALLED GUMBO, BEING MUCH USED IN WHAT, IN NEW-ORLEANS, THEY CALL GUMBO SOUP.

Several vegetables, now very popular, and some, though of great value, still comparatively but little known, have been introduced within our recollection.

The second day of April was the thirty-second anniversary of the first periodical ever attempted in the United States, whose express object was (without any support or the promise of it at the time) to collect and disseminate facts, and to awaken throughout the country a spirit of inquiry and of improvement in Agriculture, Horticulture, Rural and Domestic Economy, and Internal Improvement.

In the very first number and first page, was published from the pen of the celebrated William Cobbett, a paper on "the mode of preserving, and the uses of the *Ruta Baga*, beginning with a *description of the plant*." From this fact, the reader may form some idea of the progress which has since been made in the introduction of new plants, and the extension of horticultural knowledge. The fact is, that though at that period the Swedish, or as it was at first called *Prussia* Turnip, was more familiar to the people in New-York and east of it, the plant itself was far from being known generally. We are not sure that much if any thing better has been written about this sort of turnip, from Cobbett's time to the present day; but under a persuasion of which we cannot divest ourselves, that *root culture* may be profitably pursued to a much greater extent than it is in this country, notwithstanding our liability to droughts, and the high price of labor; we shall not stop until we have given, as to all of them, that full practical information which it may be supposed every young farmer at least would like to have within his reach, and which, on their account, will be tolerated by farmers of more experience. Why is it that we feel so strongly persuaded that turnips might be made here in a great measure, as in England, subservient to the better maintenance of stock, and of course to the improvement of our lands? It is by reference to the very heavy crops, made with and without the stimulus of premiums, which we have ourselves recorded from time to time for more than thirty years; and because we have reason to believe that Mr. Sotham of New-York, and Farmer Webster of Marshfield, who regard them as cardinal points in good husbandry, (as well, doubtless, as many others,) always count with certainty, and without disappointment, on *good saving crops of Ruta Baga from year to year*, as a regular thing. But then they take care, as every good farmer will for *every crop*, to manure well—to put the land in proper tilth—to sow good seed, and to *sow in good time*. True, a late sown crop may occasionally hit; we once knew a heavy crop of common turnips from seed sowed on the 10th of September—a thing we noticed when not more than twelve or fourteen years old; but we have also noticed, as Cobbett says, that "*God is usually on the side of the early farmer!*"

But we were speaking of vegetables introduced within our recollection. Of these the *Tomato* is one, and the Vegetable Marrow another. This last was first sent to this country, to the writer, by the Hon. Joel R. Poinsett, of South Carolina, we believe from Chili. To these may be

added, as of more recent appearance, the *Rhubarb*. But if called upon to designate the most valuable vegetable after, if not before even the Tomato, one which, considering its great value and *adaptability* to general use, has been most slowly popularized, it would be the one which stands at the head of these remarks—the *Okra!*

When residing some years since at Washington, as Assistant Postmaster-General, appointed under Harrison, we were called on to pronounce the annual Horticultural Address; and being as ever desirous of turning the occasion to a *useful*, rather than clap-trap purpose, we called attention to this neglected vegetable, and even gave in the midst of the discourse a good *housewifely recipe for cooking it.* Though then rarely to be seen, it has come since into much more general cultivation and favor at Washington. But what we particularly desire now is, to make more generally known the interesting fact that the *dried okra* offers a capital material for a most delicious vegetable soup in mid-winter. Passing in February last through the Washington Market, we saw an old colored woman with an open bag of something that looked as dry as a basket of chips. It was *okra*, that in season had been cut into thin slices, and dried as the good housewife dries her peaches. Unpromising as it looked, a quart of it was bought, and with it a knuckle of veal well cracked, by that capital mutton butcher, Mr. Miller; and a more delicious plate of soup need never be tasted than these materials afforded that day, at the round-robin table of F. G. S. of that ilk; on tasting it—Here, thinks I to myself, is a means, perfectly within the command of every farmer in the country, however remote from market, to have in mid-winter, almost without cost, a tureen of the choicest soup—such as would of itself well serve as a substantial dinner for a dozen. The plant is as easily raised as garden peas, and with an old fowl, or, if near market, a small piece of thin flank of beef, or beef or veal bones well cracked, with this nutritive and mucilaginous vegetable, will always afford a most palatable meal—one which, being once tasted, will never be refused.

To Destroy the Green Fly.—I have used garden-pots for this purpose for these ten years. The *modus operandi* is to put a quantity of coke, coal, or short pieces of wood made red hot at the bottom of the pot, and then on these the tobacco paper. That which I use is picked into small pieces before it is put on the hot cinders. The pot is then placed where it is wanted, and the embers blown with a pair of bellows, whose nose is introduced through a hole in the side of the pot near its bottom. I now recommend the use of a porridge pot (in Scotch vernacular)—a tar kettle or plumber's pot (in English). I punch out three holes in its bottom, one inch in diameter, and these afford means for a current of air to pass through the fuel. Such an apparatus is easily obtainable, and being cast-iron will last and answer the purpose perfectly for very many years.—*Cuthill.*

Lamb Lettuce, or Corn Salad.—I apprehend that the merits of this homely plant are not so well known as they should be. It forms a first-rate ingredient in a salad, and is, I believe, an excellent purifier of the blood. Being a native of Britain it is very hardy, and, if sown in July, August, and September, an excellent succession of it will be kept up during the winter. Then sow again in spring. If a large frame can be spared, the best plants might be taken up with balls and planted thickly in it. The cultivator could then have it at command. I have never blanched it, and therefore cannot say whether that would improve it or not. Sow in beds or rows 6 inches apart; thin out afterwards to 6 inches in the row. It will afford many cuttings, if not cut down too closely.—*Cuthill.*

SHOULDER LAMENESS IN HORSES, COMMONLY CALLED SWINNEY.

It is matter of regret that we cannot find room for the whole of a communication from E. Mitchell, of Chapel Hill, North Carolina, who asks information respecting an ailment of horses, prevailing in certain parts of North Carolina, and which he believes is more common in the western parts of that State and among the mountains than elsewhere. It may be that the rough and hilly nature of the country may have some connection with it, and this apprehension is somewhat strengthened by the fact that such regions not being generally within the sphere of observation of veterinary authors, we see by them little or no mention of the disease. In the region referred to as within our own observation, it is commonly called the "Swinney," or "Sweeny."

Mr. M. thinks it may be alluded to in Skinner's edition—the last—of Mason's Farrier at page 230, article 76. All that Mr. S. was called upon or attempted to do with Mason's Farrier, was to supply the supplement to that work.

Mr. M. very clearly describes the ailment, as a soreness or weakness in one or both of the fore legs, accompanied by, and probably depending upon, a diminution of the muscle or muscles covering the shoulder-blade, creating an unnatural flatness, or perhaps more commonly a hollowness there, as if hollowed out by a gouge. The animal, once affected by it, he thinks rarely ever perfectly recovers. We have heard of cases being cured by being pricked through the part affected to the bone, on the principle, perhaps, of counter-irritation; but we are surprised, on examination, to find in the books so little if any thing in particular description of this disorder of a point, in the frame of the horse, which all agree to regard as above all others important. The appearance and effects of the disorder are very intelligibly and accurately described as it has fallen under our own observation; and disappointed so far in obtaining the desired information as to the causes and cure of it, we have ordered a costly work from England of recent date, on "Lameness in Horses," in the hope of finding what is needed; in the mean time, we solicit from our readers the favor of any light they can throw upon the subject.

We had intended in this number to describe the form and qualities of the Farm Horse; but reflecting on the great importance of the shoulder, in the anatomy of the horse, and how necessary is a thorough knowledge of its form and functions in the choice of horses for particular purposes, we have deemed it more *useful*, though not so entertaining as would be a more common dissertation on the general structure and proportions. Our desire in fact is, to justify (though we have little hope of its being realized) the good intention of a distinguished patron of this work, J. A. Hamilton, Esq., who says in a recent letter: "Please to carry the above check for $10 to my credit as a means of getting the *Plough, the Loom, and the Anvil* into circulation in this neighborhood. I intend to place it, if I am permitted to do so, in the library of one or more of our common schools. The children will take the numbers home with them, and their parents will be disposed to read them. Having looked into them, and not having leisure to go through them, I believe they will become subscribers in order to have the advantage of so excellent a work."

Whether introduced into the schools or not, we intend that it shall be impregnated with such elements of *useful* knowledge to every farmer,

that it *ought to be so introduced!* yes, it *shall be* of that character and tendency, that if read at school, or by the sons of planters and farmers any where, they shall imbibe from it not only useful knowledge, profitably available throughout life, but they shall be inoculated with a spirit of curiosity and research, into subjects allied to their pursuits, that shall make them in after life, not merely better informed farmers, but better and happier men,—for we will lead them, to the extent of our humble capacity, in all their gettings to *get knowledge* and to esteem it as above all price. Reader, you are not to suppose that with us, this is any newly born passion or conceit, prompted by avarice or ambition. No! of a thousand similar proofs that we could offer to the contrary, take the following, dictated *thirty-two years* ago by the same head and heart that is addressing you now, on offering an extract from GIBBON in which he truly says that "Agriculture is the foundation of manufactures; since the productions of nature are the materials of art":—"It has been the misfortune of our country to look upon agriculture as a grovelling vulgar pursuit. Thus men of fortune have devoted their best educated children to what are emphatically termed the '*Learned Professions*,'—leaving to the most neglected and illiterate the cares and the interests of husbandry. Fortunately for the reputation, not to say the salvation of the Republic, we begin to form a more just estimate of the dignity and the rational and varied delights of agriculture. We begin to see, that the most beautiful and enlightening sciences are connected with, and necessary to the successful operations of the plough and the pruning-hook."

Alas! the progress has been rather slow, but let us hope that we are on the right road. To return to our subject—it will be admitted as of the highest importance, that every farmer should be well versed, not only in the form and properties of domestic animals, their breeds, diseases, &c.; but he should carry such knowledge into greater detail and more refinement as respects the *horse* than any other. In that animal, according as he is destined for different purposes, his shoulder is the first point to be examined; and it is only after the following lecture on that single point has been carefully read that we would propound the question: Is it not of the highest importance that our boys at common schools, on leaving them and entering upon the business of agriculture, should possess a knowledge of the facts and principles laid down in the following chapter (from Percival's "Lectures on the Farm and Action of the Horse") on

THE SHOULDER OF THE HORSE—ITS FORM AND FUNCTIONS.

No individual part of the animal frame, in the estimation of horse-people, calls for greater demands on their judgment than this: a good or a bad shoulder is held to be of paramount importance to the animal's riding or going in such a form as is pleasant to his rider, and as tells in action and safety as regards himself. The connoisseur steps up to the horse for sale, in his stall, and by simply carrying his eye over his shoulder and placing his hand upon his withers, determines at once his qualifications, either for saddle or harness, and whether he be such a nag as is likely to suit him for the purposes he requires. Before, however, I attempt to show by what art this "judge of horses" so summarily and surely arrives at this point of discernment, it will be necessary for us, first, to dissect the shoulder and examine its component parts; and, subsequently, to endeavor to analyze and understand its action in progression.

In the skeleton, the shoulder consists of two bones—the *scapula* and the *humerus*. The scapula or blade bone—the same that we find in a shoulder of mutton—is the proper shoulder-bone; the only one in man and the monkey tribe which constitutes the shoulder; the humerus being—as its name indicates—the *arm* bone:

in the horse, however, and in other quadrupeds, both bones go to the formation of the part we call the shoulder. In an anatomical point of view, the fore leg of the quadruped corresponds with the *arm* of a man or a monkey; hence arise such differences in their structure as we might expect to find from knowing how vastly unlike they are in their economy; the arm of the quadruped, in fact, becomes a leg, the hand a foot; and the offices of both altogether transposed. A man has it in his power to crawl or walk upon his hands and feet somewhat after the manner of a quadruped; a monkey does so by nature, at the same time that he possesses the power, to a certain degree, of erecting himself and walking upon two legs like a man, and using his fore limbs after the manner of arms: although, however, the monkey makes use of his upper or anterior extremities in this double capacity, neither in progression nor manipulation is he any thing like so perfect as quadrupeds on the one side and man on the other. It is the set-off of the humerus from the body—its connection with the trunk by the head alone—which, with a somewhat different formation of joint between it and the scapula, enables the bone to perform all the various motions we see the arm of a man capable of: whereas, confined and bound to the side of the ribs, as we behold it in the quadruped, it is simply susceptible of playing backwards and forwards, or, at least, of very little other kind of motion.

The scapula, being a broad flat bone, presents two large surfaces; an inner one, which is uniform and smooth, and a little excavated in order to adapt it the better to the convexities of the arches of the ribs, against which it is applied; and an outer one, having a longitudinal ridge running upon it, unequally dividing it into two smaller surfaces. Between the scapula and the ribs there is no joint—neither osseous nor ligamentary connection, but only a fleshy one; muscles alone attach the shoulders to the body; and as the body is supported anteriorly by the fore limbs, it follows that thus much of the weight is borne by muscular action, or, at least, by muscles becomes transmitted to the legs or pillars of support. A man by passing a knife between the scapula and the ribs would easily sever these fleshy attachments, and in this manner let fall the fore part of the trunk, and the head and neck along with it, to the ground. This constitutes the essential difference in their relations with the body between the fore and hind extremities: while the latter are connected to the trunk and support the hind parts of it through the medium of joints, the former hold the body suspended, as it were, between them through the intervention of muscles.

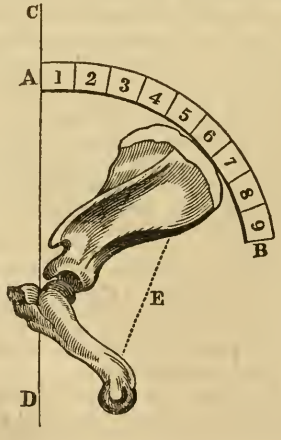
The scapula is a bone of a triangular shape, having two long sides and one short: the latter, known as its *base*, is *in situ* turned upwards; its opponent angle, obtruncated and corresponding to the apex, being turned downwards. The position of the bone in relation to the body is oblique; its basis lies as far back as against the seventh rib, while its apex is protruding forward enough to be opposed to the first rib:* at least this appears to be the common situation of the bone, it being evident that any increase or decrease of obliquity must alter its relative apposition as regards the ribs. We see horses with oblique shoulders, and with straight or upright shoulders, and we shall find that the scapula varies in its degree of inclination very materially in these two cases; and that this variation constitutes one especial point on which depends the "goodness" or "badness" of the horse's shoulder. Before, however, we can comprehend the advantages and disadvantages of certain positions of the scapula, it will be necessary for us to examine, both in and out of its situation, the other component bone of the shoulder—the *humerus*.

This is one of that class of bones termed *cylindrical;* and cylindroid, though irregularly shaped, it is. It is surmounted by a spherical top, whose surface, the segment of a globe, is smooth and polished, evidently for the purpose of playing, after the manner of a spherical hinge, within a cup-like concavity, occupying the place of the apex of the scapula. There are no two bones in the skeleton whose articular connection is of a nature to admit more varied and extensive motion than exists between the scapula and the humerus. Let a man take a horse's fore-leg in his arms, and he will find that he can not merely bring it forward and carry it backward, but can also, to a considerable extent, make it perform a sort of rotatory motion; and this, the latter especially, he is enabled to effect in consequence of the mobility existing in the joint formed between the ball or head of the humerus and the socket in the lower end of the scapula.

The power of throwing the leg outwards or inwards in action, of turning the toe out or in, of performing those motions in the manège called *passaging* or *shouldering-in*, mostly resides in the rotatory motion possessed by this joint.

Viewing the relative positions of the bones of the fore-limb in the standing posture, we perceive that the two composing the shoulder constitute, *in situ*, an angle of an obtuse character having two sides; a superior, formed by the scapula; an inferior and shorter one, by the humerus: the point of the angle being turned forwards. This oblique or angular arrangement is attended with several manifest advantages. A larger extent of surface upon the side of the body is occupied and embraced by the bones so disposed, thus affording more extensive and firmer attachment of the limb to the trunk. At the same time that this angular apposition better insures their connection with the ribs, it likewise affords the bones facility of motion upon each other without risk of disseveration or detachment from the sides of the chest; for the movements of the shoulders, which in action are considerable, have to be carried on, not only while the foot is off the ground, but at a time when all the weight of the body is imposed upon them. Another advantage of the angle is the extensive bordering and powerful leverage offered for the attachment and operation of muscle. Had the bones of the shoulder been placed upright or perpendicularly, one upon the other, in the first place, they could not have been made any thing like their present length; in the second, their connection with the body would not have been equally secure; and in the third place, their movements upon each other must have been comparatively restricted, giving rise to something in the form of action in the fore-limbs, a great deal worse than that paddling sort of going which we denominate "pinned in the shoulders." This will appear more intelligible after we have shown what is the nature of the motions or action of the shoulders.

The muscles attaching the scapulæ to the sides of the chest impart to the shoulders that strength which enables them to support the fore parts of the animal machine, and move under their burthen with a facility that no joint or other contrivance could have afforded them. The scapula or blade-bone, in the position we behold it while the horse is standing, possesses—in relation to an imaginary line let fall perpendicularly from the withers (see cut, C D)—a degree of inclination or obliquity which varies more or less almost in every individual: one horse is said to have shoulders *oblique*, another to have them *straight*, depending on the more or less inclined position of the blade-bones; and the former is valued as a riding-horse, and justly so, while the other is condemned and rejected. The reason of this will appear evident when we come to learn that every time the shoulder is put in motion the scapula makes a sort of partial revolution on its own centre or axis, which at first slightly depresses, but instantly afterwards elevates and advances its base or upper part, while its lower part or obtruncated apex, which was at the commencement of the movement advanced, recedes until the scapula has nearly or quite revolved into a straight or upright position. The more oblique the original position of the scapula the greater will be its revolving sweep, and the more free and extensive the action of the shoulder, as will appear evident from the following diagram:—



Taking the graduated quadrant A B to represent the arc the scapula describes in

its imperfect revolution, it is manifest that, setting the limit of its motion forward at the figure 1, its sphere of revolution will be increased in proportion as its inclination or obliquity is greater at the commencement: a scapula whose base inclines to number 7 in the scale will have two degrees of extent or action more than one which only reaches number 5, and two less than one whose base descends so low as the 9th degree.

The first movements of the shoulder-bones, those that lift the limb off the ground and advance it, consist in a limited revolution of the scapula, in which its base turns backward and downward, its apex forward and upward, and in a simultaneous flexion and elevation of the humerus, the effect of which is to diminish the distance (represented in the cut by the dotted line E) between it and the scapula. The projection of the limb in front of the body is effected by an extension of the humerus on the scapula, and, in rapid or forced movements, by an advance (not a revolution) of the scapula as well: but the instant the foot is grounded and becomes a fixed point and fulcrum, the scapula commences a counter-revolution, its base moving forward and upward, its apex backward and downward, and the humerus returns to its original semi-flexed position. Whether the limb moves upon the body, the foot being off the ground, or the body moves upon the limb, the foot being on the ground, in either case the scapula is in motion, its revolution in regard to its summit being backward and downward in one case, forward and upward in the other

The length, as well as the obliquity, of the scapula will have an influence on the action of the shoulder, it being manifest that a body revolving upon its own centre must describe arcs or sweeps great in proportion to its length; hence the value of a deep shoulder: though, as regards the scapula itself, the muscles attached to and moving it will necessarily be short in a case where the bone is disproportionately long, and *vice versa*. When the scapula is placed nearly upright, or is of disproportionate shortness, there cannot be that extent or freedom of action in the shoulders; neither can there be that projecture of the limb that there is in opposite conformations. The movements of the fore limbs are likely to be confined or imperfectly effected, and where those of the hind limbs happen to be "good," or of a more perfect kind—as is not unfrequently the case—there will be great danger of the horse being, by the comparatively superior action in the agents of progression, precipitated forwards.

A good shoulder not only possesses depth and obliquity, but, to complete its perfection, "lies well into the body." How often do we discover upon the superficies of the shoulder a rising a little below and behind the withers, marking the situation of the summit or base of the scapula. In the generality of instances this arises from the ribs being arched in that part, which precludes the possibility of the scapula being properly accommodated to them: a flattened body applied against one that is convex must necessarily project as the latter recedes from it; and the only way in which this can be obviated is, either to diminish or alter the convexity, or to give to the straight body a concave form; both of which accommodations are seen exemplified in what we call "good-shouldered horses." The rising is caused by the top of the scapula standing out from the convexity of the ribs. Where this is not the case, the surface appears and feels uniformly level, and where muscles or fat abound, is so smooth that we in vain seek the traces of the scapula through the skin. The uprightness and the length of the scapula likewise, in some instances, operate in producing the rising. In any case, the unevenness betrays mal-proportion or mal-apposition of parts; in other words, would not be present if all had been formed and fitted to perfection.

A shoulder, then, that possesses depth, obliquity, and uniformity, is said to be "good;" and for the purposes of those springy actions and paces which are most agreeable to and admired by the rider, good it most unquestionably is: it is good for action, good for speed, good for spring, and as a point of beauty is veritably indispensable. Still, though this be confessedly the prototype, we are not to set all other kinds and descriptions of shoulders down as faulty and objectionable. For the carriage of heavy burthen, and for heavy draught, I believe a straight or upright and rather short shoulder, provided it possess the necessary substance or muscularity, to be advantageous. Laborious draught does not admit either of a horse taking long steps or of going at any but a slow pace; and on abstract mechanical principles, a horse whose shoulder is short and upright is capable of supporting more weight upon his fore limbs than another in whom it is lengthy and oblique. The sharper the angle formed between the scapula and the humerus, and again between the

humerus and radius, the weaker, as props of support, must the fore limbs be considered. A horse, therefore, with a short upright shoulder is, *cæteris paribus*, actually stronger in his fore parts than one possessing what we might call a good or handsome shoulder. Here, in fact, as in many other instances that might be mentioned, we have on the one side *action*, and with it spring—on the other, *strength;* and as I said before, for cart or dray horses, where heavy draught is required, or for animals wanted to carry heavy loads, the short and upright shoulder is to be preferred to the lengthy and oblique structure.

The connoisseur is quite correct in his observation: "Such a horse cannot ride, *short* and *straight*—for the two properties are commonly associated—as his shoulders are;" but let him not on this account reject the animal as useless. It is, as I said before, the sort of shoulder for harness, and for supporting weight, providing it possesses the required muscularity, and providing the horse has action with it; for, be it observed here, though action may be regarded as the natural product of an oblique shoulder, yet are there many instances where it is found to result from opposite conformations, as well as instances of its absence where one would from appearances prognosticate it to be present. This discrepancy between form and action it is that is so often baffling our judgment and furnishing us with physiological problems, which, on too many occasions, we find ourselve unable to solve; nevertheless, the subject, intricate and difficult as it is, shall receive some attention when I come to speak of "action."

Let the action of the horse be what it may, however, should the shoulders be upright, we may be certain of the loss of spring in his movements being such as to make him any thing but easy or accommodating in his paces to his rider. He is complained of as being "a rough trotter"—"a bone-setter;" and the higher his action happens to be, the greater will be the concussion. Mr. Youatt has compared the spring produced by the play of the scapula upon the humerus to the spring of a carriage; and in its operation it is a happy illustration of this piece of animal mechanism; the only difference being that in the coach-spring the elasticity resides in the steel of which the spring is manufactured; whereas the bones derive their spring from the elasticity of the material—ligament—by which they are connected together, and of that—muscle—by which they are united to the body.

We have been considering the *depth* of the shoulder and the *position* of the bones composing it, and in the course of our inquiries have noticed its *substance* or *muscularity;* we will now explain what we mean by

Thickness and Thinness of Shoulder, and investigate the relative advantages and disadvantages of these counter-formations. A notion very prevalent among horse-people is, that the shoulder cannot be too thin or "fine," as they call it; and that a thick or "loaded" shoulder is only fit for harness. In these remarks truth is mingled with error, and it shall be our business to endeavor to distinguish and separate them. To set about our investigation systematically, let us first inquire what constitutes this *thickness* or *thinness;*—to what kinds of conformation the terms are applicable, or what they are commonly used to denote. A person grasps the withers of a horse with his hand, and at once pronounces his shoulders "thick" or "thin:" *thin* or *fine*, should the withers stand high and can be included between his fingers and thumb; *thick*, should the withers appear buried between the shoulders, or be so broad across that the span of the hand can with difficulty grasp them: in the former case we grasp nothing but the spinous processes of the dorsal vertebræ; in the latter, we appear to include the scapulæ as well; hence the thinness in one instance, the thickness in the other. There exists in such horses either inordinate length or shortness of spinous processes, inordinate length or shortness of scapula, or an unusual height or lowness of one or both of them, *in situ*, owing to their position. "The razor-back," as it is called, is the most remarkable instance of inordinately long spinous processes, and this is commonly combined with obliquity, and consequent lowness of the base of the scapula: altogether presenting an example of "a *fine* shoulder;" though of one that often proves on examination to be strangely deficient in substance. These razor-backs and fine shoulders are frequently seen in very old horses; indeed, it is a common observation, that "shoulders grow fine with age;" the interpretation of which appears to be, that the shoulders participate in that general process of absorption which is known to pervade the animal frame during the decline of life. In young horses, at the growing time of life, the shoulders are thick by nature, and do not, until the adult period is completed, attain that degree of thinness or fineness which they in after-life are found to possess; coupled with which fact, and in corroboration of it, stands the observation so current among breed-

ers and dealers, that their colts are certain to "rise" and "fine" in their shoulders; and which is now, by all purchasers of young horses conversant in such matters, received as a general law of Nature, to which exceptions are comparatively rare. In my next lecture I hope to be able to show, in a statistical manner, to what extent, and at what, age, such growth may be expected to take place: in the meantime I would observe in reference to it, that it appears to consist mainly or entirely of a shooting up of the spinous processes of the vertebræ. We see the colt with thick clumsy shoulders in consequence of his scapulæ reaching as high as the tops of his spinous processes: we examine him grown to a horse, and find him with finely formed shoulders—with scapuiæ no higher than they ought to be, and with withers admirably raised; and, withal, we discover on admeasurement that he has actually risen one or two inches in the withers after, to a common observer, he might have been supposed to haveattained his perfect growth.

GREAT CROP OF CORN.

On respectable evidence of disinterested gentlemen, as appears by the *Ohio Cultivator* of the 15th of February, 1851, Capt. James S. Matson, of Fayette county, Kentucky, grew on an acre of land a crop of corn, that, on the 19th of December, 1850, yielded upwards of 34 barrels, or more than 170 bushels. In Kentucky, the farmer does not take the trouble to put his corn under lock and key. Every thing has as much as it wants, and looks fat, well grown and happy—more especially the negroes, as it seemed to us. They looked as greasy and contented as if the State belonged to them.

Can you say, Mr. Editor, whether Agricultural Societies that prohibit discussion as to political causes of low prices and a losing market, will go on giving silver cups for pampered hogs and acres of land where the produce costs more than it comes to? It strikes me that it would do more good to melt these cups all into one, and offer them for the best new and economical labor-saving implement, or for the most minute and best arranged actual exhibit of outlay and income on some well-known farm; that young farmers might be so instructed how to make exact and reliable calculations of profit and loss. Let well-bred merchant farmers—such as Delafield, of New-York, or Mr. Reynolds, of Maryland, or Mr. Payton, of Richmond—be appointed to examine the statement and award the premium.* How long shall it be true, as said by that veteran and accomplished writer, Edward Ruffin?—

Reference to most of the lists of premiums heretofore offered by societies, will show that a large proportion of them are for practices which will insure a loss to every competitor—unless the premium itself shall be deemed a reimbursement to its winner, only. Subjects of this class are such as the most productive acre (or other small space) of corn, wheat, rye, and of various other crops—and for the finest (which is usually understood as including the qualities of largest and fattest) ox, cow, hog, sheep, &c. To obtain such premiums, enormous products have been raised on many particular acres; and many animals (of good breed and form it is true) have been pampered from their birth, and carried to astonishing degrees of size and of fatness. For such and approximate results, hundreds, possibly thousands of premiums have been awarded by the numerous Agricultural Societies of the Northern States, and the few in the Southern. And yet, unless to gain another such premium, never has any of these particular practices been repeated by the successful competitors, or imitated by any other person—and for the sufficient reason, that both such cultivation and such manner of feeding are of more cost than profit.

* Note here, by the Editor.—He so cordially approves this suggestion, that he will add to the premium a copy of the best single volume in print—in his estimation—Von Thaer's Principles of Agriculture, and a year's subscription to the Plough, the Loom, and the Anvil.

From the Albany Cultivator.

OF PLOUGHS AND PLOUGHING.

Editors of the Cultivator :—When I began farming, I found that my lands had never been ploughed over four to five inches deep. By long use of the plough, and the oft-repeated pressure of the cattle's feet in furrows of this depth, a hard crust or *pan* had been formed, through which the roots of the grasses and other crops did not penetrate. Not being able by my own reflections to discover any good reason why the roots of my crops should be confined within so narrow limits, and finding that the standard authorities in agriculture almost invariably recommended deeper ploughing, I resolved at once to give the crops a greater range of pasture. Each field, in its regular order, was accordingly broken up six inches deep. The additional soil thus brought to the surface was allowed to remain there, subject to the influences of the atmosphere, and of good cultivation. When the fields were ready for the next rotation, I found the roots of the grasses had extended just as low as I had ploughed, and that, to all appearance, the soil was of uniform quality to the depth of six inches. This state of things pleased me so well that I determined to plough still deeper ; and the fields were accordingly broken up seven inches deep. It is true, the appearance of the surface of the inverted furrows was rather suspicious and forbidding ; but I had hopes that the agents that had operated so kindly before would act favorably again. They did so ; and the crops were satisfactorily increased. At the time for the next rotation, I found the grass-roots had penetrated and formed themselves into net-work just as low as I had ploughed. I had now become well satisfied that deep ploughing was better for me than shallow ploughing ; and I have accordingly been slowly but constantly deepening the soil, until portions of the fields bear a furrow nine inches deep ; and as many grass-roots will now be seen at this depth as were formerly seen at the depth of six inches. The crops are good ; for their roots can now strike deep, and expand, and luxuriate, and gather up nourishment, in formerly forbidden boundaries.

I think it may be said, generally, that deep ploughing should be the rule, and shallow ploughing the exception. It is true, that some soils may never, under any circumstances, bear as deep a furrow as others ; then, again, where the surface soil is by nature very thin, and the subsoil is very poor, the process of creating a fertile soil eight inches in depth is a work of time, pa'ience, and skill ; and though it be the work of a life-time, it may yet be a very profitable work. But the soil of by far a majority of our farms may be deepened an inch or so at a time, if accompanied by liberal manurings and good cultivation. In other words, a suitable range for the roots of our crops may be obtained in a few years. In no case, however, should the surface plough be plunged into a poor subsoil at hap-hazard.

As soon as I was ready to turn sod-furrows seven inches deep, my ploughs began to be troubled to carry themselves erect and do as good work as at six inches deep. At eight inches deep they did not do nice work, and at nine inches deep they could not work at all, until I added some contrivances of my own.

About a year ago, I called upon Messrs. Ruggles, Nourse, Mason &

Co., and upon stating the difficulties I had experienced with my ploughs, they remarked that there was quite a growing demand for ploughs for deep work; and they at once evinced a most commendable readiness to undertake such a series of experiments, regardless of expense, as should enable them to supply, in the best manner, this demand of an advancing agriculture. They made a plough that gave me satisfaction, for it could turn a furrow a foot deep, and it did not choke under the beam. The making and trial of this plough suggested further improvements, and these in turn led to others. The various experimental trials may be summarily stated as follows:—

1. To make a plough to turn furrows ten to twelve inches deep, and to turn them without choking under the beam.

2. To make a plough to turn deep furrows, requiring the least practicable width in proportion to the depth of furrow.

3. To make a plough to turn deep narrow furrows, and to turn them on so easy a line of transit as to prevent breaks in the furrow-slice.

4. To make a plough to turn deep narrow furrows on the easiest practicable twist, and to lighten the draught of the plough whenever it could be done without detriment to the best work.

5. To make a series of sizes of ploughs for turning flat furrows, seven, nine, and twelve inches deep, each plough proportionately combining the above specifications.

The experimental trials also led to the production of two sizes of ploughs for adhesive soils, laying lapped furrows at an angle of 45°; and two sizes of ploughs for turning stubble furrows.

Fig. 1 represents a furrow-side elevation of the No. 72, or smallest size of the new flat-furrow ploughs, and fig. 2, a horizontal plan of the same. In considering the remarks I offer upon the No. 72 plough, it will be borne in mind that plough No. 73, for furrows nine inches deep, and plough No. 74, for furrows twelve inches deep, each possess the same general form and working properties of No. 72. They are each constructed upon the principles of an ingenious scale, the lines of which, as applied to the mould-boards of the three ploughs, are relatively the same throughout.

Fig. 1 represents the handles as long and *raking*, which gives the ploughman a powerful leverage, and an easy and accurate control of the implement; the beam is high, and arches well over the coulter, to permit loose grass or other loose matters to pass off, and the plough to swim clear; the coulter is consequently long, and is made wholly of steel, to give it the requisite stiffness; the wheel or roller is nine inches in diameter, to prevent laboring and creaking on the axis, and it is set under the beam, experiments the past summer indicating that a wheel on the side of the beam gives the plough an unsteady movement; a wrench accompanies the plough, adapted to the adjustment of the coulter, roller, clevis, &c.; the draft rod is short, connecting with the beam forward of the coulter in order to preserve the space under the beam in that region entire; the quadrant or clevis attached to the end of the beam, through the bolt of which the draft-rod passes, is adapted to give the plough any desired *landing* or *earthing;* the mould-board is long, the line of transit over it for the furrow-slice is easy, giving the slice a long, easy, and equal curvature throughout.

Fig. 2 shows the inclination of the land-side, and the coulter has a corresponding inclination. Fig. 2 also shows the position of the beam

over the body of the plough. The share and lower parts of the mould-board are narrow, and the mould-board is high, to adapt the plough to

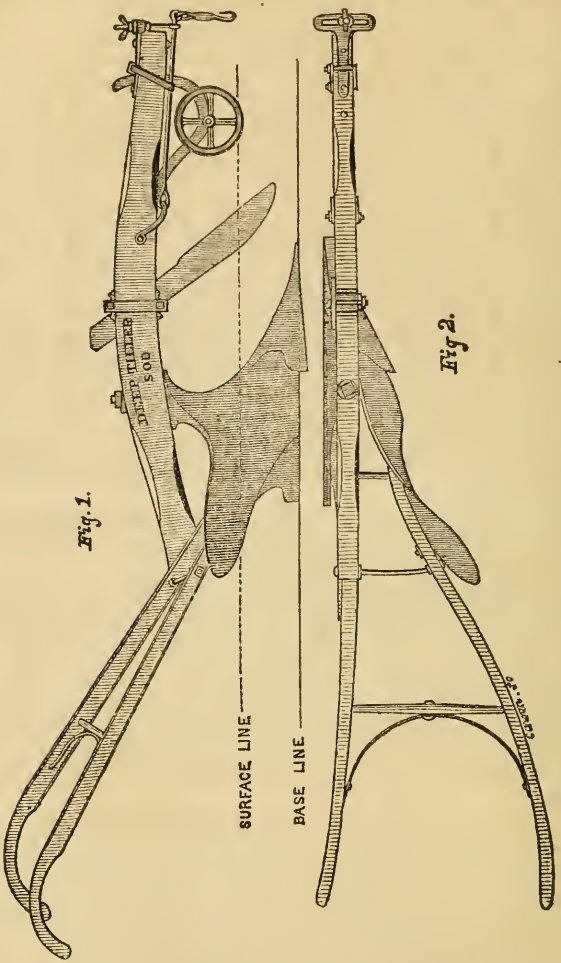


Fig. 1.

Fig 2.

Ruggles, Nourse, Mason & Co.'s Furrow Plough, No. 72—Furrows 7 by 11 and 12 inches.

deep, narrow work. The share is long, with a raking cut, which gives it an easy entrance into the ground.

Fig. 3 represents pretty well the movement of a furrow-slice seven inches deep and eleven inches wide, over the mould-board of this plough, and its final position after leaving the plough. The easy transit and the equal flexure of the slice are noticeable. By means of the inclined land-side and coulter, the slice is cut off the land upon a bevel, which very much facilitates its dropping in snugly beside the previously turned slice. It will be observed that the width of cut made by the share is such as to leave a good hinge uncut, upon which the furrow holds its proper position at the bottom, while the top is describing a quarter of a circle to reach the perpendicular position, at which position the plough has ripped off the hinge. If the slice were cut entirely off by the share, it would be apt to

push off at the bottom so far as to fail of being turned over to its proper position,—in other words, a wider furrow would need to be taken to turn well.

Fig. 4 shows that, theoretically, a furrow cut straight from the land will shut in beside the previously turned furrow. The furrow-slice, c, d, e, f, is cut straight down at a, b, and rising on the corner c, as a pivot, it describes a quarter circle, b, d, and then changing to f, as a pivot, it describes another quarter circle, e, g, and shuts in snugly beside the previous furrow, g, h, i, k. But in practice it is difficult to make the furrows do so; they are very apt to ride on the corners, as represented by Fig. 5. With an inclined land-side, and a bevel-cut from the land, this practical difficulty is avoided.

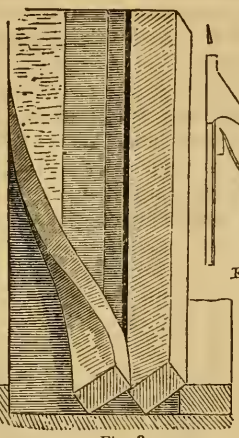


Fig. 3.

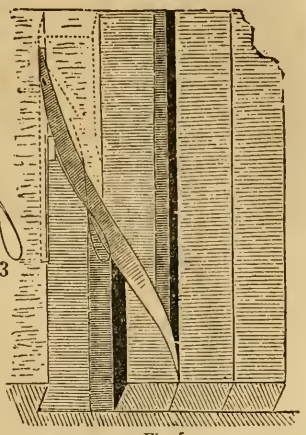


Fig. 5.

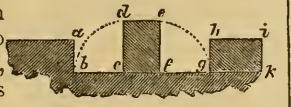


Fig. 4.

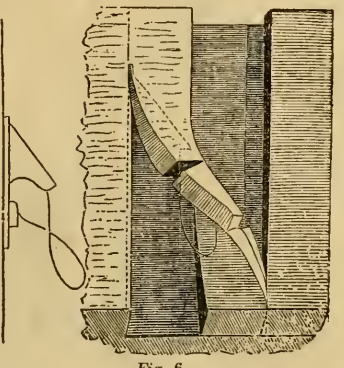


Fig. 6.

Fig. 6 represents the movement of the furrow-slice over an imperfect mould-board. It will be observed that the plough is too wide on the bottom to take a narrow furrow, and if the attempt is made to turn an eleven inch furrow, there is no hinge left for it to turn on. The mould-board is so short, and wings over so excessively, that the furrow-slice is cramped into an unnatural movement, and is badly broken. The plough is also too low every way for a seven-inch furrow, and is completely buried. We find in practice that such ploughs can only be kept erect in furrows seven inches deep, by constant, laborious exertion on the part of the ploughman; that they have a constant tendency to ride the furrow at the point where the mould-board wings over so much; that the heel of the land-side sole is lifted an inch or two from its proper level position in the furrow-channel, and that the plough inclines very much to run on the point of the share. Many of our American ploughs are too wide on the bottom for narrow furrows, too low in the mould-board for deep furrows, (or furrows seven inches deep,) too short for turning any furrows perfectly, and too unsteady in their movements generally.

It is a too common custom with our farmers in ploughing, to strive to

get over the greatest possible breadth of land in a day, without regard to the best work. The furrows are too shallow, and they are cut as wide as the plough can possibly turn them, and often even wider, the deficiency in the plough being made up by the foot of the ploughman, or else by the "cut and cover system;" and this gives the plough a very unsteady action; the furrows are very crooked and uneven; they do not match together at all well; the ploughman raves and scolds and whips; he assumes all sorts of attitudes; the team is chafed and fretted, and the whole matter is wrong. It is much harder work both for man and team to plough so, than it is to take nice, straight, uniform furrows. But this is not all the evil. The implements that follow the plough cannot do their

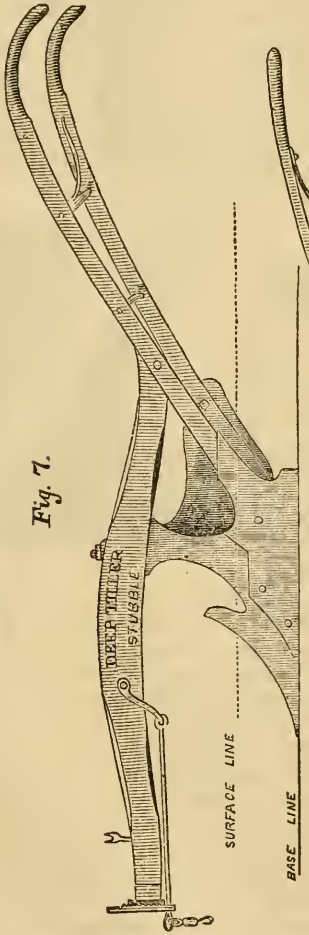


Fig. 7.

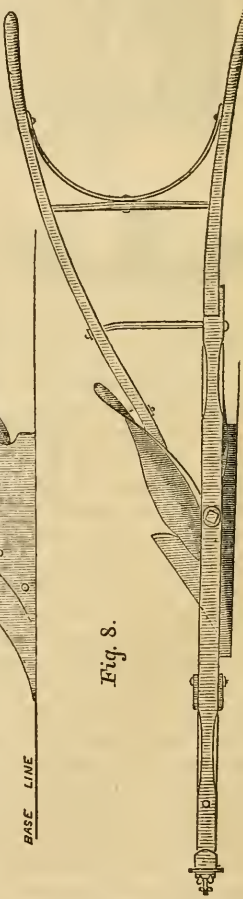


Fig. 8.

Ruggles, Nourse, Mason & Co.'s Stubble Plough, No. 37.

work half so effectively as they would do if the ploughing had been accurate and nice,—much less can they do what should have been done by the plough. There is no work in the whole round of husbandry that more demands the exercise of patience, precision and skill, than that of plough-

ing,—none, where, by the exercise of these qualities, the farmer receives a better reward. That old worthy, Jethro Tull, in his honest enthusiasm used to say, that if land were thoroughly pulverized, manure would not be needed. He stated the case pretty strongly; but it is not stating it too strongly to say, that however well land may be manured, the crops it is *capable* of producing will not be obtained, unless it is well pulverized—unless it is reduced to that state of tilth that permits a free circulation of air and moisture through it. Not the thick heavy clods, but rather the finely pulverized particles form the active portions of the soil. In whatever light, then, we view the matter, thorough pulverization should be the aim of the farmer. *Deep narrow* furrows are the best foundation for fine tilth. If the plough has failed to prepare this foundation in the best manner, no implement following in the cultivation can supply the deficiency.

Fig. 7 represents a land-side elevation, and Fig. 8 a plan of stubble plough, No. 37. There is a larger size, No. 38, adapted to deeper work than the plough here represented. The surface-line, Fig. 7, shows the position of this plough in a seven-inch furrow. The handles are of good length, though shorter than those of the No. 72 plough; the beam is high and arching; it is mounted with a short draft-rod and a dial-clevis, adapted to give the plough a wide range, both in *landing* and *earthing*. The perpendicular height from the base-line to the under side of the beam, immediately forward of the standard, is seventeen inches, which enables the plough to make its way among rank stubble, corn-stalks, &c., without choking. The fin-cutter is an excellent point in this plough. By making an easy, clean cut from the land, the furrow is not encumbered with clods of earth rolling down from the land-side, as they are apt to do where the furrow is torn from the land by the breast of the plough. The fin-cutter also lightens the draught of the plough. Fig. 8 shows the form of the mould-board, the position of the beam over it, and the position of the land-side.

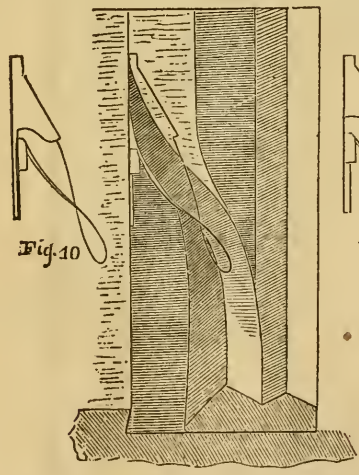


Fig. 10

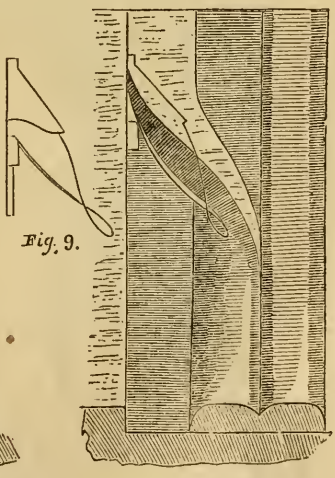


Fig. 9.

Fig. 9 is a pretty good representation of the work of this plough in stubble or old land. It is noticeable that the furrows are nicely laid for the reception of the seed-grain; that the furrow-slice is all taken up and forced over to an inverted position, and there it stays; and that the furrow-channel is entirely cleaned out for the reception of the next furrow. It

is impossible, however, to represent these practical matters exactly on paper; we can only represent them generally.

Fig. 10 represents the work of an approved sward plough, in stubble furrows. It is not broad and full enough at the heel to clean out the furrow-channel. Then, too, after the furrow-slice has reached the perpendicular position, there is not force enough in the mould-board to compel the slice to go over to its proper place, and as there is not cohesion enough in the slice to hold it together, a portion rolls one way, and a portion the other. The centre of the furrow on top is therefore the highest, the furrow-channel is half filled up, and the work generally will not compare with that done by the stubble plough No. 37. The stubble plough No. 37 would not make nice work in sward furrows; it would break them too much.

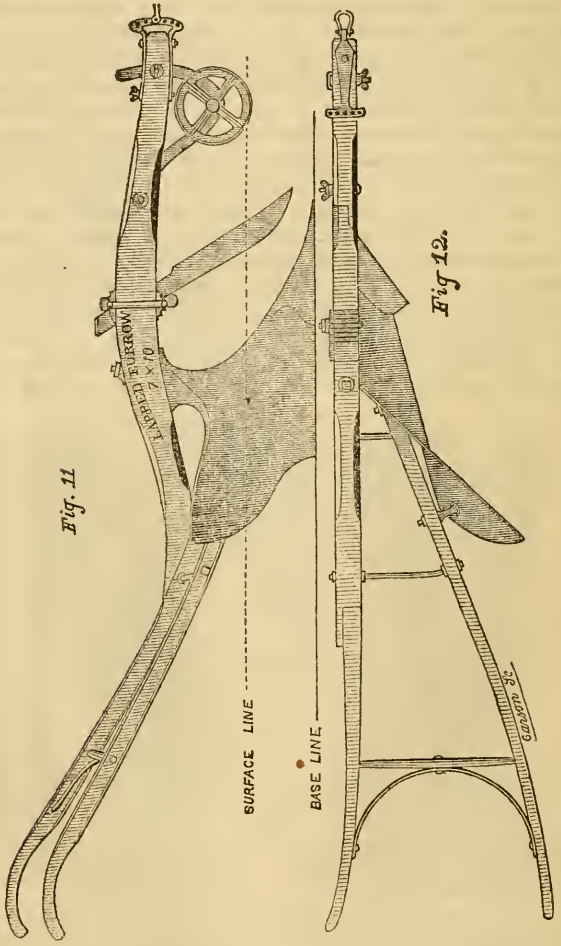


Fig. 11 represents an elevation, and Fig. 12 a plan of the new sward plough for moist adhesive soils. There is another size, for furrows nine

inches deep, of the same general form and proportions with the one here represented. The handles, Fig. 11, are long and raking, the beam is high, giving a space of seventeen inches forward of the coulter, and the plough is mounted with a Scotch clevis, the adjustment for *earthing* being represented in Fig. 11, and that for *landing* in Fig. 12. The general outline of the mould-board is very well represented in Fig. 12. The share is narrow, the wedge-power great, and the back part of the mould-board is adapted to place the furrow-slice exactly at an angle of 45° before leaving it. The land-side is perpendicular, and the coulter stands in a range with it.

In considering the form and proportions of a plough best adapted to the working of stiff heavy soils, Messrs. R., N., M. & Co. have thought that plough the best that will cut a perfectly rectangular furrow, whose depth is to its width as two is to three, and lay it at an angle of 45°. The ploughs for stiff lands that they now offer the public, are adapted to work as above specified. They combine the best working properties of the celebrated Scotch plough invented by Small, with the lightness and cheapness of the American plough. The lines of the scale from which these mould-boards are fashioned, give the mould-boards a slight convexity of surface, which is considered an advantage in the working of tenacious, unyielding soils; but the lines may be varied to straight lines for medium soils, or to concave lines for light sandy soils. The line of transit for the upper edge of the furrow-slice is adapted to the delivery of the slice with an unbroken crest. The mould-board presents a uniform resistance to the furrow-slice, and will brighten uniformly over the entire surface, however tenacious the soil may be.

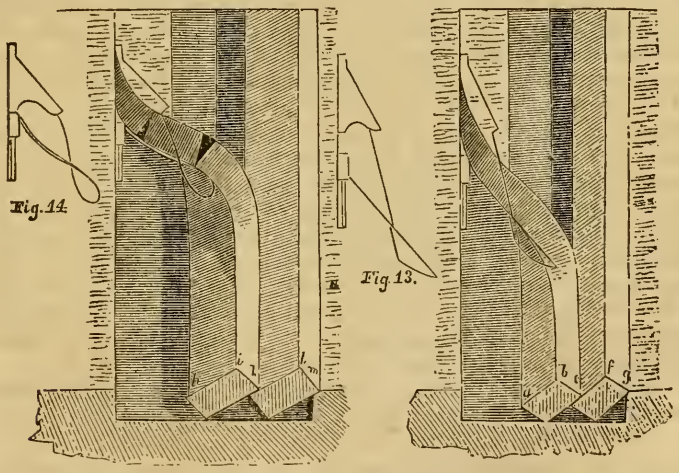


Fig. 14.

Fig. 13.

Fig. 13 represents the action of this plough in furrows seven inches deep by ten inches wide. The plough enters the ground very easily; a good hinge is preserved upon which to raise the furrow-slice to its perpendicular position; the back part of the mould-board lays the slice at an angle of 45° before leaving it, and the two exposed faces of the slice are of equal breadth,—namely, seven inches.

Fig. 14 represents the action of a plough unadapted to laying proper lapped furrows. The plough is so wide upon the bottom as to require a

width of furrow-slice of at least twelve inches, and yet it cannot go more than seven inches deep,—indeed it can hardly do that, without crowding over to the left or land badly, and it cramps and breaks the slice very much. But the slices are of unequal proportions. The width is too much for the depth, and, consequently, so flat a surface is formed, that if the furrows are to lie exposed for some time to the weather, and if the soil be a stiff adhesive clay, it will run together and bake so much as to render the harrow quite inoperative, and but a shallow seed-bed will be raised. The spaces underneath the furrows are wide and low, and they will be apt to fill with soil, which will prevent a proper circulation of air, and a free passage of superfluous moisture, and the surface will be apt to be wet and heavy.

The triangles, a b c, e f g, Fig. 13, are of equal sides, and the angles, b, f, are angles of 45°. The triangles h i k, k l m, Fig. 14, are of unequal sides, and the angles, i, k, are angles of only 36°. If we suppose a series of *sections* of these 7 by 10 and 7 by 12 furrow-slices, each extended to ten rods, for instance, in width, and that they are one inch thick, we shall find, upon a calculation of the aggregate exposed surface of each, that the furrow sections, 7 by 10, of equal faces, have exposed 2,791 inches of surface to the air, while the sections, 7 by 12, of unequal faces, have exposed but 2,722 inches; and any one who chooses to extend the calculation and comparison to an acre of ground, will find the balance to be very much in favor of the slices represented in Fig. 13. A like comparison of rectangular furrow-slices, whose depth is to their width as two to three, and which are laid at an inclination of 45°, with furrow-slices of any other form or proportions that are practicable to be laid, will be found to result in favor of those first named; indeed it can be shown that no furrow-slices but rectangular ones, whose depth is equal to two-thirds their width, *can be laid at an inclination of* 45°; and since it can be proved that rectangular ones, whose depth is equal to two-thirds their width, and which are laid at 45°, present the greatest surface to the ameliorating action of the atmosphere; and since it can also be proved that such furrow-slices present in their projecting angles the greatest cubical contents of soil for the harrow to operate on, in raising a fine, deep tilth, or seed-bed, and that such furrow-slices have the best spaces for the circulation of air, and the passage of water, underneath them, we may conclude that all ploughs, for laying lapped furrows in heavy adhesive soils, are absolutely faulty in just so far as they fail to cut rectangular furrows, whose depth is to their width as two to three, and to lay them at an angle of 45°. I would give unerring mathematical demonstration of these points, were it not that I should be extending an article already too long.

I intended, Messrs. Editors, to have said something about the importance of each radical improvement in the plough, in increasing actually the wealth of the country, not only directly by the increased crops to be derived from improved ploughing, and the direct saving of expense in doing the work, (a good plough saving time and labor,) but, indirectly, by exciting in the farmer's mind a new degree of pride and ambition to farm it better every way. But my article is already too long, and I forbear.

F. Holbrook.

Brattleboro', January 29, 1851.

REMARKS ON THE BEST MODE OF PRESERVING GRAIN,

PARTICULARLY THE CEREALS.

TRANSLATED FROM THE FRENCH, BY JAMES BRYAN, M.D.,

Professor of Institutes of Medicine in Philadelphia College of Medicine.

In the September number of the *Comptes Rendus*, we find an interesting extract of a lecture on the best mode of preserving grains, by Léon Dufour.

Mr. Dufour is well known in Europe as a very acute observer of the habits and histories of insects, as well as a scientific Agriculturist. "The reading," he says, "of an article by M.M. Bobiére and Cartier, on the means of preserving grain, inserted in the *Compte Rendu* of the Academy of the 12th of August, 1850, has reminded me that in 1841 I addressed a memoir on this subject to the Central Society of Agriculture, of which I am corresponding member.

"The method which I indicated to preserve grain from the charancon, (the weevil,) the papillon, (the fly ?) and other destructive insects, is founded on reason and experience. The secret consists in placing the grain in conditions unfavorable to the production and development of the insect without injuring the grain. Now air, light, heat, and moisture are doubtless influences favorable to all germination, both animal and vegetable. Place the grains beyond the influences of those agents, and they may be preserved for ever. It is on this principle that the silos or granaries of the Arabs are conducted, and the *trostres* or tours of the Mexicans, in which millions of bushels of grain remain fresh and unchanged for indefinite periods. There is but one upper aperture, and one lateral one, through which the grain is introduced and taken out, both of which may be hermetically sealed.

"Before," says he, "stating the simple and economical plan which an experience of fifteen years has taught me to be the best, I will say a few words on the origin of my practice. I often found that grain garnered into one building, chiefly for the use of the farm, became affected with the fly (Papillon ou Alucite) in my granary at all seasons, while that of the laborer, placed in boxes (bahuts) or hogsheads, placed in the most obscure parts of their houses, were perfectly preserved. This hint was not lost upon me or others.

"I resolved, therefore, to place, immediately after the harvest, my grains well dried (but without artificial heat) in immense casks, (tons,) bought at a low price from the grocers or tobacco merchants. I staved in one end, and covered it with a movable covering, retained in its place by a large stone.

"These hogsheads, or tierces, containing from six to seven hectolitres of grain, are placed on one end in rows along the wall, in the darkest part of the granary, keeping the window-shutters always well closed. It is found that by this process twice as much grain may be placed without inconvenience in the same granary. I may here mention the testimony of Victor Rendu, Inspector of Agriculture, who has seen and approves of my mode of putting away grain. I know some large farmers of our country who have constructed, on the same principle, large receptacles of wood, which will contain more than sixty hectolitres.

"I repeat, that after fifteen years' experience in this process, I have not only found no insect in my grain, but what is of more importance, the depredations of rats and birds are avoided, as well as dust and all sorts of waste. The grain acquires no odor, there is no loss, and it preserves its purity for panification or germination. Indeed the merchants prefer it to all other grains.

"It would be easy to adopt this plan for large quantities in cities, by making with sheet-iron or zinc large receptacles, to hold forty to sixty hectolitres, and placing them in the above-named conditions. We do not here speak of the modifications necessary to be adopted for the extension of our plan to so great an extent. I have thought that some hints might be taken from the above by our farmers and others who deal in grains, in reference to their preservation. The depredations spoken of are not uncommon, as I well know, among farmers, especially where no care is taken to exclude the light and moisture. A barn or granary should of course be built in a dry place, with a basement below the surface of the ground, where the varieties of temperature of the external air would not be felt. In this basement, provided it be perfectly dry, may grains generally be kept."

DAIRY HUSBANDRY—CHEESE-MAKING.

ADAPTED TO A LARGE PORTION OF MARYLAND, VIRGINIA, TENNESSEE, KENTUCKY, GEORGIA, AND THE CAROLINAS.

Our readers will bear witness that this journal has not been inattentive to this interesting branch of rural industry, which, not less than any other, must languish or extend itself and prosper in proportion as *others* spring up and flourish within its reach. But why is it that it has not gotten fast hold, and thriven throughout the upland and mountain regions of Maryland, Virginia, Georgia, Kentucky, Tennessee, and the Carolinas—a vast expanse of country to which *dairy husbandry* is so eminently adapted, abounding as those regions do in perennial pastures, in cool and copious fountains of the purest water, with a climate peculiarly adapted to this business—why is it that, throughout the region referred to, the production of butter and cheese should go so little, if at all, beyond the local demand? Is it not because they have advocated a policy which forbids them to fill their mountains and mountain valleys, their coal-pits and their iron-mines, and sites for various manufactures, with tens of thousands of artisans and operatives, who ought to be there employed in working up their coal, and iron, and timber, and wool, and flax, and leather; and while doing so, make a market on the spot for their beef and mutton, and butter and cheese?

Yes, this it is—this cry of "free trade" with the mother—no—stepmother country, that has kept this vast and magnificent region almost as sparsely settled and as desolate as when inhabited alone by forlorn savages, blind to the use of all the rich and various materials bestowed on it by Providence, for the support of a numerous and civilized people. As the native Indian pursued his game over beds of iron and fields of coal, and through trackless forests of timber and evergreen prairies, unconscious of their value, so do these fertile resources of population and wealth re-

main almost totally unused, monuments at once of the bounty of Providence and of man's ingratitude. Could any man believe that, with resources so unbounded as we possess, for rearing wool and manufacturing woollens, we should import annually from England, of woollens alone, some ten or twelve millions of dollars? We hope the time will come when posterity will be slow to credit it.

There are signs, however, that the public mind of these old States is beginning to see the importance of so diversifying industry and concentrating population, as to bring all our own resources into play. When that consummation so devoutly to be wished shall have been realized, then will the capabilities of the great region we have described be put to the test; then will its people begin to understand their unequalled adaptation to the production of *coal and iron, cloths and leather, beef and mutton, butter and cheese.* In the mean time, the extending circulation of this journal in the butter and cheese districts of Pennsylvania and New-York is sufficient to warrant a fair share of attention to the subject, and prompts us to give the following extracts from a recent lecture in England on cheese-making, selecting only such parts as appear to be adapted to practical use in our own country. It may be as well to premise that these observations are made, not by a scientific, but by a plain practical man of much experience.

Before he treats of the dairy, he remarks on the importance of keeping the cows warm, a thing which we know is grossly neglected throughout a large portion of the United States. On this subject he says:—

Warmth has a very great influence upon the secretions of milk; and even a walk out of the shed for the purpose of drinking, tends very materially to lessen the quantity given by a cow in the cold season of the year. Every cow-shed, for milking beasts especially, should have a supply of water, so that the animals may help themselves without exposure to the influences of wet weather or a lower temperature. I must beg to inform you, that this is no fancied or theoretical view, but is actually the fact; and that a great decrease in the quantity of milk delivered in our dairy was traced to such simple cause. Some one, for mischief, had sent down the main water-pipe, that supplied the shed, a small bundle of straw, which lodged in one of the branches and completely cut off the flow on that side. Sixteen cows were then in milk, and half (in consequence of the water being cut off from them) were turned out twice a day to the pit, not a hundred yards off, to drink, and were immediately brought back again. A complaint was made to the man in charge of the cows that the milk was falling off considerably in quantity! and, further inquiry being instituted, it was ascertained from the milker that the loss lay upon the eight cows turned out to water, for every one had abated in her milk. This accident was at the time very satisfactory to myself, as it proved that an outlay which had been made upon theoretic views was really useful, and had not in practice been thrown away. To make you fully assured that the abatement in the milk of these eight cows was caused by their simple exposure to the unfavorable influences of a lower temperature and different atmosphere, I must tell you that, with the removal of the stoppage in the pipe, and the consequent flow of water permitting the cows again to drink in the warm shed, they gradually recovered their former quantity of milk.

So much for the influence of warmth upon the secretion of milk.

He next remarks upon the importance of regularity in feeding, and upon milking, as follows:—

But if cattle are to receive the principal part of their food in sheds, very great attention must be given to them. They must have change and variety in their food, and they must be regularly served with it. A man in my employ, who attended to a lot of thirty-three milking beasts, went to the funeral of one of his relations; I left home the same day on business, giving these cows in charge to a young man

who lived with me at that time, under his promise that they should have plenty to eat. I believe he was afraid of the rain which fell on that day, and therefore neglected his charge; for on my return at night I heard the cows in the shed calling loudly for something to eat. The next morning there was a falling off of milk to the extent of nine gallons, at night eleven, and the following morning thirteen. This was late in the year; but the cows, for that season, never recovered the quantity of milk which they had previously given.

I have mentioned this fact to show how very dependent the secretion of milk is upon the supply of food, and how much the success of dairy operations depends upon the attention bestowed upon the animals which are to produce the milk. Kindness, gentleness, and quietness, are requisites with cleanliness, in all engaged in a cow-shed; and all bad tempers, quarrelsome dispositions, and noisy, boisterous persons, should never be allowed to set their foot therein!

Ere we leave the shed for the dairy, I have a few words to say upon the time of milking. The usual method pursued in this county is to milk twice a day—morning and evening. In Lincolnshire they will milk thrice, and in Scotland sometimes five times in the day. Last season I adopted the plan of milking thrice in one shed only; this season we are milking three times at both; you will therefore infer that I have proved it to answer. I will also tell you that, in May last, I mentioned this plan to a gentleman who supplies his milk to Leicester. He tried it upon a lot of twenty-nine cows, and he told me that on the third day from the commencement of his trial, these cows gave him in the day fifteen gallons more milk. I met this gentleman on Saturday last, and he said he should adopt this plan again. In addition to his former opinion of its utility, he gave me this further information: that his cows had formerly been greatly troubled with sore bags, but after the thrice-a-day milking commenced he had no more of them. We have all seen the udders of the cows greatly distended with milk, and it is no wonder that the animal feels pain, and that local inflammation ensues.

Objections may be raised to this third milking—some will say the cows require more keep. I answer, the cows are machines to convert grass into cheese, and if I can make each cow do more work, I save the outlay of capital in purchasing an unnecessary number of beasts. Some will say it must be injurious to the animal. The lot milked last year thrice a day on this farm are equal in health and condition to the lot milked twice, and are now open to inspection.

Before I quite close this portion of my subject, I must observe that milking qualifications in an animal are equally capable of transmission by descent, with the distinctive marks of the various breeds, or with their propensities to fatten; and if they are capable of transmission, they are also equally capable of improvement by cultivation. It behoves, then, the farmer who rears the supply of cows for his own dairy, to be particular in looking for a good line of descent in the milking qualifications of all animals introduced into his herd. It behoves him to see that these qualifications are maintained in full power to each individual, and that they be further improved in his hands by stimulating foods and regularity of milking—by kindness, warmth, and general attention to their health and habits. In short, a dairy farmer should not only care for his herd, that they give milk at the present moment in the greatest abundance, but that they have their milking powers kept to the utmost stretch as the means of producing fine milkers in generations yet to come. Perhaps I ought not to omit some practical notice of the secretion of milk. It may be styled a sympathetic operation, and the supply, in a great measure, will be regulated by the demand. This is an all-wise provision of Nature for the necessities of the young of animals; and we only follow the teaching of Nature a little more closely by milking oftener than twice a day. To use the words of our man who looks after a part of the cows, "The milk does not flow to the hands (that is, the udder is not so distended) now as it was in twice-a-day milking; nevertheless, after milking a minute the supply will come." To illustrate more particularly the sympathetic affection between the action of milking and the consequent flow of milk, I quote this man a little further. He was speaking of a particular cow, and said she had no milk in her bag when he commenced milking; but it came by milking a short time, and in such quantity, that he has often wondered where she had previously put it. This man is not a physiologist or theorist: he spoke only matter of fact.

THE DAIRY.

I will not attempt a minute and chemical account of the process by which the milk we delivered from the cow-shed is here to be converted into cheese,

but will content myself with practical observations upon the management of the dairy. The object of all is to produce the greatest money-profit ; and, according to my ideas, this is best achieved by making the best quality of cheese. At Leicester fair, last autumn, there was a difference in the value of dairies to the amount of 18*s.* per cwt., which, at 3 cwt. per cow, will give £2 14*s.* per cow., or £54 in a dairy of 20 cows. Now, when it is considered that a little extra care and attention form perhaps the chief item in the higher prices, it is surely worthy of consideration whether we can in any way amend our plans. There is also another point upon which I would suggest a question. Can we, by thought and contrivance, lessen the labor of cheese-making operations ? I determined, if possible, to do with less labor in the manual part of cheese-making. I tried several schemes—some rather expensive—some of them failures ; while some were attended with success.

The object I had in view was to secure the whole of the curds, and also of the butter in the cheese. To effect this, it is necessary to avoid breaking the curd by the hand, either in the cheese-pan or the vat ; for by much breaking and crushing, a large quantity of minute particles of curd and butter are separated from the mass, and are carried off by the whey, to the loss, both in weight and quality, of the cheese.

To remove the whey from the curd with the least disturbance, we introduced the use of the syphon ; and to save lading out the remainder of the whey and curd from the cheese-pan into the vat, we adopted the plan of swinging the pans on pivots fixed to their centres. The cheese-vat is merely placed upon a lead, the pan is turned upon its pivots, and its contents are delivered at once into the vat ; whilst the whey which had not been entirely removed by the syphon escapes into the vessel, where it is to be skimmed for the butter it yet contains. On reference to our last year's account, I find ten ounces per cow was the weekly average of the butter removed by this method from the cheese.

I will now notice a few points that have become known to us in our experiments in cheese-making, after which, and the discussion which I hope will follow, I shall have pleasure in showing you the dairy, where the arrangements in use may speak for themselves.

One of the greatest desiderata now is a means of testing properly and accurately the strength of the rennet. So far as my knowledge extends, this can only be arrived at by actual trial. The common method is to make a large quantity ; and by ascertaining the actual strength upon a cheese, there is some little guide obtained for future operations, so long, at least, as this manufacture of rennet will last. But it is of very great importance that a better guide for the dairymaid's use should be laid down ; for all excess of rennet, after the production of curd—that is, all that is not required to convert the milk into curd—will remain in the cheese to promote early decomposition, and is often the cause of great pecuniary loss.

The process of cheese-making depends upon chemical causes and influences, which in themselves are as unvarying as other natural laws. To procure the conversion of milk into curd, a certain degree of temperature must be obtained ; and we have observed that 82–84 deg. (about 12 deg. lower than when it comes from the cow) is the proper heat to be observed in the summer season for putting the milk together, and about two degrees higher in cold weather, to allow for the greater decrease of heat by surfaces coming into contact with a cooler atmosphere. A thermometer is now a necessary appendage to the cheese-pan. I may as well add in this place that 52½ degs. is the proper temperature for conversion of milk into butter, and that two or three days' churning of cream (which we sometimes hear of) in winter before butter is collected, is solely to be attributed to its low temperature.

But although 82 to 84 degs. is the proper heat for putting the cheese together—producing, according to present experience, the greatest quantity of curd—still it is not then sufficiently high in temperature to allow its complete separation from the whey. To facilitate this separation, it is found desirable to run off a portion of the whey, which must then be made hot enough to raise the whole mass in the cheese-pan to 90 degs. This in a few minutes will cause the curd to fall ; and the whey must then be drawn off as quickly as possible, for, if allowed to remain too long, it has a tendency to toughen the curd. Our practice is then to put the milk together at 82 to 86 degs., according to the weather. We let it stand an hour and a half before breaking in the pan ; this is half an hour longer than generally allowed ; but as we wish to use the smallest quantity of ren-

net in converting the milk into curd, we find it necessary to give a longer time than ordinarily is allowed for its full conversion. After breaking and settling a few minutes, we apply a syphon to run off the whey, and for this reason—it disturbs and breaks the curd far less than is done by lading. From putting the cheese and rennet together, till the curd is removed from the pan into the vat, the time occupied is about two hours and a half.

I have seen, both in Gloucestershire and Leicestershire, a mill employed in grinding up the curd; and I notice often in our neighborhood, also, that several break up by hand, to what I consider the injury of the cheese. I see, likewise, round us, two, three, or four persons about a cheese-vat, crushing with their hands; and I have been told that it is generally thought right to continue such process for an hour at least, before the cheese goes to press. Now we dispense with a great deal of this (to us) unnecessary attention. The curd goes from our cheese-pan directly under the press without any hand-crushing whatever. There it remains ten or fifteen minutes; the edges of the curd are then pared off, and put into the middle of the cheese, which is pierced with a skewer on both sides, and returned to the press. In a quarter of an hour it is pierced again—the edges are cut off on the opposite side—and again it is put under press; in half an hour the cheese is pierced the third time - put into a dry cloth—and the press is now allowed to complete the work. I should explain that the press used in this process is a lever press, working up to 23 cwt., and the weight brought to bear upon it at first is small, but is increased as the cheese advances in solidity. From the delivery of the curd into the vat, till it is fixed for final pressure in the press, about two hours are taken up; but for full half that time the person employed in attending upon the making may be occupied in the other work belonging to the dairy. And it must be borne in mind, that with the separation of the liquid from the solid matter, our trouble with regard to the former is ended, as there needs no carrying to the whey lead for skimming, and no further carriage from thence to the cistern. You will observe, in the dairy, the whey goes at once into the leads, and from them is removed by taking up a plug, which allows it to escape to the cistern.

I need not go into the minute details of brining, salting, &c., as every one conversant with cheese-making must be well acquainted with them; but I will observe that many points which appear to be of little consequence to a casual observer will make a great difference to the economy or the profit of cheese-making.

It is the object of all of us—at least, it ought to be so—to make a good quality of cheese; and this is undoubtedly best achieved by making up at each meal immediately; every gallon of milk, so converted, will produce, at the lowest, sixteen ounces of curd; and there must be some mismanagement if it ever falls below that quantity. At the autumnal season the relative value of the milk for cheese-making is greatly increased, and will sometimes yield one-eighth more of curd to the gallon. With the above object (quality of cheese) we often combine also those of size and family convenience; and for that purpose milk will sometimes be kept till the next meal. In warm weather this keeping of milk is attended with some care, for unless the temperature is brought below 56 degs., milk will acquire an acidity, and the result will be a sour-milk cheese. This cheese will be of less value per lb.; but this will not be the whole of the loss; for experience has told us that the same measure of milk which has yielded 56 lbs. of curd in a sweet state, has, by a slight change, yielded only 45 lbs. To keep milk sweet over the meal it is necessary to cool it by water; 52½ degs. is the temperature of water, which, being brought in contact with the vessel containing milk, and occasionally changed, will secure the milk from going sour. We have accomplished this object in our dairy by passing through it a running stream; by setting tins of milk in a trough through which this stream passes, we can keep the whole of Sunday's milk sweet for Monday's use. There is also another advantage derived from this plan: by cooling the milk in deep tins, and occasionally stirring it, the cream is prevented from rising to the surface, and does not require the trouble of skimming and remixing with the milk, which reunion by artificial means is never thoroughly accomplished.

Among other discoveries from my various trials, I have found that tin vessels will not answer for cheese-pans. I thought to save expense by using such, but, after the first season, was obliged to lay them aside; for the chemical affinity between tin and curd is so great, that we could not separate it wholly by the breaker, and slip-curd, consequently, was found in almost every cheese.

I will close my remarks upon the dairy in Professor Way's words:—"Scrupulous attention to cleanliness is another essential of dairy management—the scalding,

cleansing, and airing of the dairy-vessels being of the greatest importance. No stable and drain should be near it, and the cheese itself, were it possible, should be separated from it."

CHEESE ROOM.

A few remarks upon the cheese room ere I close my subject. Too often this is inconveniently situated under the slates of the house. In the summer it is too hot, in the winter it is too cold. The great heat of summer may be lessened by hanging up wet blankets at the window; and I have just heard that, by allowing a few worsted threads to drop from these into a bucket of water, the blankets will be kept wet by the force of capillary attraction. In the winter the external air must be excluded as much as possible, and artificial heating by steam or other means must be employed. I recommend, where it can be conveniently done, that hot water should be used: the heat is more generally diffused, and the air is not rendered so dry as to crack the cheese.

With the utmost care employed, some of the cheeses will be found to crack. These should be filled up, and a little paper pasted over to prevent the attack of flies. I can only recommend as general rules, that you should allow no extremes of heat or cold, moisture or drought, to affect the cheeses whilst in your possession, and exchange them for money as soon as you can effect a sale.

IRRIGATION.

Translated principally from the "Journal d'Agriculture pratique."

BY F. G. SKINNER.

That the yield of a crop is generally in proportion to the quantity of manure applied to it, and that profit does not depend so much upon extent of surface cultivated as upon manure and good tillage, are agricultural axioms, the natural deduction from which is, that a small, well-cultivated, and heavily manured farm, will return a greater net revenue than a much larger one, with the same expenditure in labor and manure spread over a larger surface; and of this fact, we are surrounded by proofs on every side. In all the older States, under an improved system of tillage and manuring, we find mere fractions of what were once large estates, yielding not only greater proportional profits, but actually larger aggregate returns, than did the original estates of four or five times the extent of surface.

Manure is the chief source of agricultural prosperity; by its means bad land is converted into good, and the most barren wastes compelled to yield the richest products. Of all known manures, none are of such value and importance as those from the stable and cattle-yard; for these are adapted to a greater number of locations and variety of soils, and to all plants, and modes of cultivation. True, substances are frequently used as fertilizers, much more energetic than ordinary farm-yard manure; but it is only to *supply a deficiency in the latter, or to increase its action.* These fertilizers are not to be had in sufficient quantity, nor is their transportation so easy, as to dispense with the necessity for stable manure, without which in most cases agriculture would become an unprofitable pursuit.

As the productiveness of a farm or crop depends less upon the extent cultivated than upon the mode of cultivation and the amount of manure applied, so does the quantity of manure made depend less upon the number of animals fed than upon the amount and quality of food consumed; and in relation to manure, cattle are only to be looked upon as

machines for the conversion of forage and other food into that substance, a part of the forage being assimilated by the animals for their sustenance, and the remainder voided in the form of manure, the value of which mainly depends upon the richness of the food; for it is well known that the droppings of a lean, ill-fed beast are inferior in quantity and quality to those from a fat one. It may, therefore, be assumed as a maxim, that the prosperity of a farm depends chiefly upon the amount of food consumed upon it; and in general, the amount of hay made upon an estate is a safe indication of its condition, and an increasing production of forage is a sure sign of agricultural improvement.

As a means of producing food for stock, *irrigation*, whenever tried, takes precedence of every other, and the chief reason is, that instead of *consuming, it produces manure.*

The process of irrigation has invariably, wherever carried out, proved of almost incalculable value, and there are probably few countries that would derive greater benefits from its general introduction than the United States. Indeed, there are large portions of our recently acquired territories in New-Mexico and California, that must ever remain barren wastes without it.

A bounteous Providence, in giving water to the cultivator, furnished him the means of increasing his crops to an almost indefinite extent; for by means of irrigation, this simple element, poured out in most places in such abundant profusion, becomes the "kindling instrument of life and energy to the vegetable world." Water is indispensable to the perfect development of plants, for its elements enter into the composition of all of them. Not only does it enter chemically into their organization, but it also holds in solution foreign matter which serves them as manure, and which is either deposited or rendered of easy assimilation: thus from 75 to 95 per cent. of nearly all green plants consists of this element. Almost all spring waters contain carbonic acid, and frequently sulphur, lime, and a variety of salts, a greater part, if not all of which, being decomposed and absorbed by the plants, contribute greatly to their development.*

Rivers, small streams, and most spring brooks carry with them minute particles of earth, which are deposited in the form of a rich mud or slime. Rain-water too, flowing over roads and fields, becomes charged with fer-

* The following analyses, by Professor Johnston, exhibit the composition of the waters of four different rivers:

	Ale.	Eye.	Riglaw	Wear.
Organic matter,	1.75	1.64	2.58	0.92
Potash in the state of sulphate,	1.68	0.80	0.72	1.50
Soda and chlorides,	.....	0.44	1.94	
Gypsum, (sulphate of lime,)	0.64	1.46	2.94	0.88
Carbonate of lime,	5.28	3.48	7.32	7.92
Carbonate of magnesia,	1.00	1.24	1.64	2.04
Chloride of magnesium,	1.82	0.80	1.25	.....
Oxide of iron,	0.56	0.48	0.60	0.56
Sulphuric acid,	1.44	0.98	1.80	0.96
Chlorine,	0.36	0.70	1.65	1.10
Silica,	0.24	0.08	0.32	1.20
	14.77	12.10	24.76	17.08

tilizing principles, which are carried into the rivers, and finally lost in the ocean, if they are not arrested in their course by the skill of the cultivator, and applied as manure to his fields. The soils thus swept away form a mass of which it is difficult to form a conception, and continual changes are being made upon the earth's surface by the constant but imperceptible action of water upon mountains and hills. It is calculated by Rinnel, that the hourly deposit of mud at the mouth of the Ganges amounts to 2,509,056,000 cubic feet, at the mouth of the Nile to 14,784,000, and at that of the Mississippi to 800,000. Few rivers, indeed, carry with them such enormous quantities of mud as the Ganges, the Nile, or the Mississippi, but all of them, nevertheless, sweep away to the ocean more or less of fertile soil of value to agriculture, and thus produce changes upon the surface of the globe, by which future generations may profit, it is true, but at the expense of our own. Mountains and hills are constantly washed by rains, all their fertile parts are carried off, and they finally become naked masses of barren rock if nature has not heaped upon them an inexhaustible supply of vegetable earth, or if the losses are not repaired or prevented by skilful management. Soils at the mouths of rivers, of recent formation, are the sources of malaria and other unhealthy emanations highly prejudicial to animal life. While nature by her vast combinations thus prepares fertile fields for generations to come, she does not forbid the exercise of man's ingenuity to compel the spendthrift waters to pay a passing tribute of fertility to his wasting fields. By covering the mountain slopes and hill-sides with grass, and turning aside the streams for its irrigation, agriculture may diminish a portion of the evil, and profit by that which it cannot prevent.

In northern climates, irrigation so far has only been applied to meadows, and but little, if it all, to cultivated or ploughed lands. At the south, under the burning zones of Asia, Africa, and America, water is essential to every species of cultivation. It is applied to the grains, to the vine, and indeed to every plant requiring a degree of moisture that cannot be derived from the atmosphere. Rice, the grain that probably contributes more than any other to the support of human life, and the most important product of southern climes, requires frequent and abundant irrigation; that its "foot should be in the water and its head in the sun," is an indispensable requisite to its profitable cultivation.

In warm climates, irrigation made itself felt as an absolute necessity by the most ancient nations, and stupendous works for the purpose were executed at a period now lost in the night of time. The best known to us are those alluded to in the books of Moses, and described by the profane writers.

From Upper Abyssinia, near the eastern coast of Africa, two chains of mountains descend parallel with the Red Sea, nearly to the Mediterranean; between these two chains flows the Nile. From its source to about midway its length, it is hemmed in by high mountains, then it opens upon a vast plain which constitutes the kingdom of Egypt. With a surface one third less than the State of Virginia, this kingdom supported in the time of Sesostris a population of 25,000,000, a standing army of 400,000 men, and was covered with superb structures and magnificent cities. It constituted the first and wealthiest kingdom of the earth; it was the sole emporium of corn to the surrounding nations; it was the birthplace of the sciences that civilized, and of the arts that adorned ancient Greece and Rome; and even now, modern nations are

contending for mere fragments of her glorious monuments, with which to embellish their cities: and yet all this wealth, grandeur, power, and civilization may be fairly attributed to irrigation—irrigation on such a scale as the world never saw before or since. The whole territory of Egypt was divided by immense levees and dykes into three great zones, and the waters of a great river were controlled, and managed, and used for agricultural purposes, as completely as if they had been those of a mere rivulet. Surrounded as Egypt is by naked and sterile mountains, and by the arid sands of the desert, (except upon the Mediterranean coast,) rain rarely falls there; the want of it is in a measure supplied by heavy dews, but still, without the annual overflow of the Nile, all vegetation would speedily wither away beneath a scorching sun. The river, unaided by artificial means, overflows a vast surface; but the ancient Egyptians doubled the extent of their arable lands by compelling the water to spread over a wider space. But time and barbarism have destroyed their works, the glory of Egypt is departed, and her habitable territory has shrunk to less than half its former dimensions. The Egyptians were not the only people who thus made water tributary to agriculture. In the now desolate regions surrounding the once proud cities of Nineveh and Babylon, the remains of aqueducts, tunnels, and canals yet exist, to overwhelm the wondering traveller with their stupendous proportions, and which prove that even the waters of the Tigris and the Euphrates were rendered obedient to human skill and industry. In China, where agricultural art has remained stationary for centuries, the earliest travellers, Marco Polo, Ruberquis, and others, marked the care with which water was turned to irrigation, and the skill evinced in its application.

From Egypt the art of irrigation passed into Greece, but it never reached there the perfection attained in so many other arts drawn from the same source; and the reason is obvious,—the young men of Greece were educated to public life, they cultivated the finer arts, and the cares of husbandry were abandoned to slaves. Nevertheless the worship of their gods, of fountains, and of rivers, and the ceremonies attached, prove that the irrigation of meadows and fields was one of the important operations of Grecian agriculture.

Persia, with her burning sky and sandy plains, owes the greater part of her fertility to the use of water, and in that kingdom the art of irrigation is duly appreciated. Laws are still in force there which existed long before the people of Greece grew to national importance, exempting from taxation for a certain number of years such lands as were most skilfully irrigated. From Greece civilization, the sciences and the arts passed into Italy, and with them the Romans acquired the art of irrigation, as is proved by the remains of canals and the testimony of the Roman writers on rural economy. The plains of the Milanese were enriched by the waters of the Po and the Adige, which were completely controlled by means of locks and dams, as is shown by an inscription still extant upon a marble tablet at the Roman gate of Milan.

The northern hordes of Goths and Vandals that overran the Roman empire, and who at a later period finally established themselves upon its ruins, though they remorselessly destroyed monuments and temples, spared the works dedicated to agriculture; the dams, sluices, and aqueducts were not only respected, but maintained in efficient repair; and at a

later period, when peace prevailed, additional irrigating canals were dug, which are still in existence.

The Saracenic domination, which in the eighth century extended itself with great rapidity around the shores of the Mediterranean, was signalized in Spain by the impulse it gave to agriculture. From the banks of the Oxus and the skilfully watered plains of Persia, Syria, and Babylonia, along the African desert, through the island of Sicily, to the Spanish peninsula, the indefatigable industry of the Saracens, and that of their ingenious successors, the Moors, manifested itself in the prosecution of every kind of agricultural labor. In Spain they carried it to a degree of perfection which has never been surpassed in Europe, never equalled perhaps, except in Holland and the Netherlands.

They had seen in the East and thoroughly understood the one grand necessity of southern agriculture. When it is said, and with truth, in such a climate as that of England, that drainage is the first great requisite of farming, it is only the expression of a truth which applies in the same sense to irrigation in all soils liable to drought. In England the superabundance of water, here its deficiency, is the great point for correction, anterior to every other improvement. The race of Spanish Arabs had the merit of extending this knowledge and the practice consequent upon it in Europe. By spacious reservoirs, canals, and aqueducts, they conveyed the great ELEMENT OF FERTILITY into remote districts, which had before been barren only for the want of it. Under their care and skill, the plants and vegetables of Asia and Africa for the first time grew side by side with the native products of Europe, and the sugar cane and the cotton plant laid the foundation for that great impulse to European art, which was destined at a later period to cause so great a change in the industry and commerce of the world. Even to this day the traveller in Grenada and Valencia, amidst scenes of utter apathy and indolence, varied only by a chronic system of intestine dissension, worthier of a savage than a civilized nation, often meets the remains of a once magnificent system of irrigation, standing like monuments of the indefatigable labors of a race that has passed away, but carrying with them so lasting an attachment to Spain that, long after their final expulsion from Europe, they retained and handed down through many generations recorded titles of their estates, and even the very keys of their houses in the Spanish peninsula.* Hitherto the influence of Saracenic genius, though extending the whole length of the Mediterranean, on both its shores, had little opportunity or inducement to penetrate northward. Spain, their grand and final conquest and favorite settlement, and which had become a perfect model farm of southern agriculture, was too much separated on the only land side from the rest of western Europe, by the broad chain of the Pyrenees, to have produced any extended influence. Its position was altogether unfavorable to northern communication. What the Arab conquests, however, had failed to accomplish, the crusades providentially carried out. When the hosts of rude mail-clad warriors of the West, obedient to the call of the hermit-soldier, poured over the fruitful plains of the East, they witnessed a perfection in the agricultural art of which they had never dreamed before; and such of them as lived to return to their homes took with them the knowledge of irrigation, probably not the least valuable of the many benefits incidentally derived from those senseless expeditions.

* Foster's "Mahometanism Unveiled."

The science of hydraulics has participated in the progress made by all the branches of human knowledge. It is conjectured, that in the middle ages, irrigation and the construction of works connected with it were based upon practice and observation only; but now the lamp of science lights the way, and we may proceed boldly onward with entire certainty as to results. Upon many points of Europe new canals have been dug to enable agriculture to profit by the fertilizing effects of water, and the practice of irrigation, even in that (as compared with the United States) moist climate, is extending in every direction.

In this short exposition it may be remarked, that man from the earliest ages has been led, both by nature and necessity, to water his meadows and fields; that even the most barbarous conquerors felt not only a just appreciation of what had been done for irrigation, but became irrigators themselves. We see, moreover, agriculture always progressing with national liberty, and with the arts and sciences. The art of irrigation is, with the exception of the United States, now to be found among all civilized nations; and in certain parts of England and Germany it has made great progress: in the latter country it has probably made greater advances than elsewhere. The country of Seigen has acquired great celebrity for its system of irrigation. Protected and encouraged by the Duke of Nassau, it has become there really an art; and when reference is made in Germany to the method of watering meadows, it is always understood to be such as is practised on the banks of the Seig. Grading the soil—its distribution—the management of the water—in a word, all the processes, are subjected to rules that make of irrigation a real science—which we will now endeavor to explain in such of its details as are of easy application in the United States.

Water.—All the water existing in the atmosphere returns to the earth in the shape of rain, snow, hail, mist, or dew. The permeability of the earth's surface allows the infiltration of water, which descends until arrested by impervious strata of clay, rocks, &c. The fluid follows the inclinations of these strata until pressure or some other cause forces it to the surface, whence the origin of springs. These springs united form brooks, and the union of several of these, rivers, by which the waters flow into the sea. Thus this element forms an endless chain: rising from the sea in the form of vapor, it falls again to the earth, and thence returns anew to the ocean. All the water, then, applicable to irrigation, must be derived from rain, springs, brooks, rivers, or lakes.

[TO BE CONTINUED.]

From the Journal of the Roy. Ag. Soc. of England.

ON THE ACCURATE LEVELLING OF DRAINS.

BY COLONEL CHALLONER.

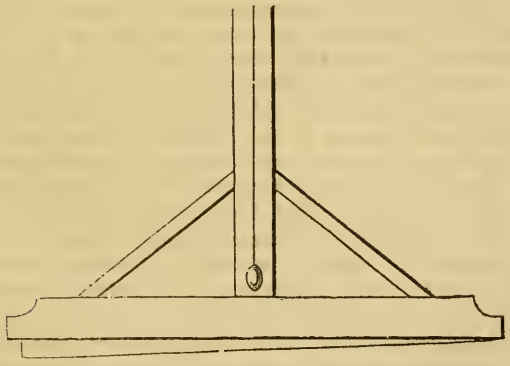
To Ph. Pusey:

DEAR PUSEY:—As complaints are very often made of failures in draining, in consequence of drains choking or stopping up, especially where small pipes are used, I am induced to address a few practical remarks to you, not with the view of suggesting any thing altogether new on the subject, but rather of calling the attention of many of our professional drainers, as well as the landowners and farmers, to a few matters of practical detail in the manner of cutting the drains and laying in the pipes, which, if attended to accurately, will greatly lessen the causes of complaint

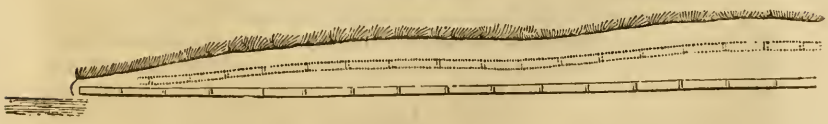
against the (much abused) "small pipe-tiles;" for I have found by experience that the large-bore pipe-tile is equally subject to stopping up or choking, from the same cause as those of a smaller diameter.

It is generally the custom for drainers, when cutting drains, to try if they have the proper fall, by pouring a small quantity of water into the bottom of the drain, and if that runs in the direction they wish, they rest satisfied that they have cut the drain to a proper and regular fall; whereas if that cutting is proved or tested by the level, as hereafter described, it will be found to be any thing but what it ought to be, especially where the fall from the head of the drain to the outfall is but trifling; and upon accurately testing it, it will, in most instances, be found that the workman has consumed more than the due proportion of the amount of fall that he has at command in one portion of the drain, while his tiles will lie dead and flat in another; and in many instances I have found the tiles lying in hollows, and following the *undulations of the surface*, as if on purpose to collect the sand or sediment which in a short time chokes the drain. I will now very briefly state how this may be avoided with little or no additional expense or trouble, and what I have myself practised with the greatest success and satisfaction to my workmen.

I first ascertain what amount of fall I can obtain from the head of my drain to my outfall: suppose the length of the drain to be 96 yards, and I find I have a fall of 2 feet, that gives me a fall of one quarter of an inch in every yard. I then take a common bricklayer's level, 12 feet long, to the bottom of which I attach with screws a piece of wood the whole length—1 *inch wider* at one end than at the other—thereby throwing the level 1 inch out of the true horizontal line; when the drain has got to its proper depth at the outfall, I apply the broadest end of the level to the mouth, and when the plumb-bob indicates the level to be correct the 1-inch fall has been gained in the 4 yards; and so on I keep testing the drain as it is dug quite up to the head, when an unbroken, even, and continuous fall of 2 feet in the whole 96 yards has been obtained. The pipes are then laid in, and the level proved again on the pipes, which regulates any little inequalities in laying them in: this I have found that the men do willingly without any additional charge per rod; but even supposing that the men were to fancy that it was any additional trouble, a very slight increase in the pay per rod would be amply and fully compensated by avoiding, in many instances, the vexations attendant upon draining.



Bricklayer's Level on a large scale. The false bottom may be made with a hinge, so as to answer for any fall.



A—Undulating surface of Land.
B—The line shows the position of very many drains when accurately examined by means of the level.
C—The plain line shows the position of a drain put in as recommended.

SANDSTONE AS A BUILDING MATERIAL.

To the Editor of the Plough, Loom, and Anvil:

Under the conviction that every house should be constructed with *direct reference to its use*, and that in building houses for *public operations* rigid economy should be adhered to by the selection of the cheapest materials which *are fit* for that purpose, the object of this communication is to show the fallacy of the grounds on which sandstone has, for some time past, and recently by two reports from the Department of the Interior, been denounced as a *perishable material*, and in *all respects an unfit one* for the construction of houses in Washington City which are designed for *public operations*, in fact, and to all *practical ends*, *workshops*.

The objection to sandstone most relied on is, that it cannot, without *ruinous decay*, endure the action of wet and frost on it. And as evidence of this, attention is invited to a few blocks of *imperfectly petrified* sandstone which *by inattention* were placed in the walls of the Capitol. Those blocks are, after the lapse of half a century, to some extent (by no means ruinous) impaired, as would be the case with any other species of imperfectly petrified rock. As well might brick be denounced, since, *by inattention*, some of these which have been *imperfectly burnt* are often placed in a wall. They decay by exposure to wet and frost; while *well-burnt* bricks thus exposed sustain no injury. Such is the case with sandstone; for though a few *malformed* blocks of it in the walls of the Capitol are to some extent impaired, the remainder of the blocks are as sound under the *same exposure* as when taken from the quarry. Obvious as all this is, those impaired blocks are considered good cause by the Secretary of the Interior to recommend paint or a *mask* of marble to be put on the sandstone walls, in order to preserve them, of all the public offices. And this recommendation is made on the erroneous assumption that paint was put on the sandstone walls, in order to *protect them* from decay, of the Capitol and mansion of the President. Those walls were constructed in the year 1799, and paint on them was not deemed necessary to preserve them *from decay*, or to gratify such as might be horrified at the dull color of sandstone, until August, 1814, when the Capitol and mansion of the President were burnt, but without the least damage to their sandstone walls. The only bad effect of the fire on those walls was to spread on them a profuse black smoke; to remedy which those walls were painted, but not, as is assumed, to *preserve them*. If those walls had been *then* constructed of the *now* much-admired marble, or granite, the same fire would have utterly destroyed them; and the cost of reconstructing them would have been as a mountain to a mole-hill, compared with the now much complained of cost of the paint on them.

As evidence of the early use and durability of sandstone as a material for building, the walls of the Castle of Edinburgh, one of the oldest buildings in modern Europe, were constructed of red sandstone, an inferior article to ours; and those walls are now unimpaired, though unprotected by paint, or a *mask* of marble. Again, the writer of this has resided more than eighty years in the midst of an extensive sandstone region; during which time he has known it to be used for building, and for many other purposes, and he has never seen a *perfectly formed* block of it im-

paired by exposure to fire, or to the action on it of wet or frost. He *now knows* a very large mansion house and suitable offices, the walls of which are of sandstone; and though they were constructed more than a century since, they are now as sound as when put up, and that without the protection of paint, or a *mask* of marble on them. And there are now grave-stones of it in the old church-yards in Virginia, which date back from one to two centuries, as unimpaired as when taken from the quarry; and the inscriptions on them as perfect as *when executed*. Not so on marble! But what ought to be sufficient of itself to silence all objections to sandstone, especially to its fitness for the construction of the *public offices*, is the fact, that General Washington, who had been many years *practically* acquainted with it, recommended it as the *most fit* material for the walls of the Capitol and mansion of the President; and in order to insure a supply of it in the most certain and *cheap* mode, he advised the purchase, on public account, of a sandstone island in Aquia Creek, distant from Washington City fifty miles down the river Potomac. The purchase so advised was made, and though that island is now the property of the Government, the devotees to marble, regardless of cost, make no use of it. This advice of Washington erected a monument to his sound judgment; since those houses, though they were burnt in 1814, left their sandstone walls perfectly unimpaired, and so they remain *now* after the lapse of half a century, with the exception of a few *imperfectly formed* blocks already referred to above. Without regard to all this, two distinguished gentlemen, members of the Committee of Congress on Public Buildings, backed by some devotees to magnificence, cost what it might, and by others desirous to open *a good market for marble*, all made a rally when the present Treasury Office was to be constructed, and they all advocated marble as the most fit material for that building. But better counsels prevailed, and sandstone was adopted. When, however, the walls of that building were complete and ready for the roof, those gentlemen and their associates again rallied and made a proposition to have them *taken down*, to be reconstructed with *marble*. To effect this, they invited two stone-masons, one in New-York, the other in Philadelphia, to come to Washington, in order to examine those walls, and to give their opinion as to the fitness of sandstone for their structure. Those individuals came and made the desired examination, and they united in a written opinion that sandstone exposed to wet and frost could not last more than seven years, and that its texture was so friable as to render it certain that the ponderous arches constructed of it would crush down as soon as the frames of wood over which they had been put up should be taken from under them. Again better counsels prevailed; as evidence of it, the walls *then proposed to be taken down* are now as sound as when they were put up, and that without the protection of paint, or a *marble mask*. And as respects the frailty of the arches, the individual who had constructed them, regardless of the aforesaid opinion of his brother masons, *at once* took the frames from under them, and that, too, before the masonry work *was entirely dry*. The result was, that all those arches stood firm, so that to *this day* there is not a *visible crack in any one of them*. A signal proof this is of the masterly skill with which those arches were constructed, as also of the capacity of sandstone to sustain pressure; which, by the way, has been tested at the Navy Yard here, and a block of sandstone sustained more pressure than a block of granite of equal size. And as to the comparative capacity of sandstone

and marble to sustain, without injury, exposure to wet and frost, the naval monument at the western base of the Capitol exhibits a striking proof in favor of sandstone. That monument stands in a reservoir of water ordinarily about four feet deep. The base on which it is placed is of sandstone, and of course *immersed* in water to the extent of four feet, and during winter often for many days embraced by *thick ice:* yet not the least injury has been done to the sandstone, or to the base formed of it; while the marble superstructure, though high above the water, and exposed *only to rain and frost*, is in great disorder, and without repair must perish. When the present Post Office was to be built of sandstone, the advocates of marble, under the pretext of hiding the dull color of the walls, and the yellow spots on them occasioned by the solution of the sulphate of iron, were successful in having a *marble mask* placed over them, which has turned out to be a remedy as bad, if not worse, than the disease complained of; since a solution of the sulphate of iron, which marble also contains, is profusely spread over the *marble mask*, so as to render it as yellow as the face of a newly painted Indian. And to cap the climax of the now prevailing devotion to marble, the Patent Office, built of sandstone, is to be enlarged by two magnificent wings of marble, which is in about as good taste as to place fine cambric ruffles on a coarse brown shirt.

Such being the facts in regard to sandstone, why should it be discarded as *an unfit* material for the construction of the *public offices?* All such houses, and the furniture in them, should exhibit without mistake the *purpose* for which they *were designed;* and it is to be regretted that such houses are now constructed and *furnished* with a *magnificence* which does not comport with that economy which those who *profess* to be republicans ought to observe and *practise.* Such is the humble opinion of an invariable republican from the year 1776 to this date.

RHUBARB.

Mr. Joseph Myatt, of Deptford, a kind and most benevolent man, now upwards of seventy years of age, was the first to cultivate rhubarb on a large scale. It is now nearly forty years since he sent his two sons to the borough market with five bunches, of which they could only sell three, so little was the value of this excellent vegetable then known. The other two bunches they brought home with them. The next time they went to market they took ten bunches with them, all of which were sold. "Coming events cast their shadow before them," and from the small but increased sale, Mr. Myatt judged, and rightly, that rhubarb would become a favorite. He therefore determined to increase its cultivation, and year after year added to his stock; the demand for it was augmented in an equal ratio. For his first dozen roots he was indebted to his friend Mr. Oldacre, who was then gardener to Sir Joseph Banks. They consisted of a kind imported from Russia, finer and much earlier than the puny variety cultivated by the Brentford growers for Covent Garden.

It is reported of Mr. Rivers, that when he first began to speculate largely in rose growing, his old foreman, long since gone to his last resting-place, came one day, with a very grave face, and said, "Master Tom, you are *surely* out of your mind; what *are* you going to do with all those brambles? It is a shame to plant them on land that would grow standard apples!" So it was with Mr. Myatt and his extensive rhubarb planting. When one of his sons said in market one day that his father intended to plant an acre next year, they said, "Your father, poor man, is fast taking leave of his senses." Like Mr. Rivers and others of a "go-a-head" turn of mind, Mr. Myatt had to contend against many prejudices; but time, that "universal

leveller," overcame and broke down every barrier, and rhubarb is now no longer called physic as it was then. In our own day, it forms most delicious and wholesome tarts and puddings, as well as an excellent preserve; and as we have sugar and flour so cheap, any system of growing this useful "vegetable fruit stalk," as it may be called, earlier and more plentiful during the winter than it is at present, must prove a benefit.

By the plan I am now about to propound, I think rhubarb might be had fit for table at least five weeks before the London growers could obtain it out of doors. But in the first place, let me premise that there is a wonderful difference in the sorts as to earliness and quality. Myatt's Linnæus and Mitchell's Royal Albert are the earliest and the best flavored, and wherever any of the other rougher sorts exist, they ought to be done away with at once; for there is as much difference between the flavors of rhubarb as between a ripston pippin and a codlin apple. Besides, we want every thing early, and as rhubarb is so easy of carriage, what reason can there be why Cornwall and Devon* should not furnish it in large quantities, as they now do the London markets with their far-famed white winter broccoli? In these days rhubarb would find a ready market in every town in the kingdom, and there would be no fear of producing too much, provided it could be sold cheap enough. As manure is a principal item in its culture, the supply of this must be duly considered, before the locality is fixed on where it is to be grown, which should be fields contiguous to some line of railway or steamboat. Being one of the grossest feeders of any vegetable we have, rhubarb should have plenty of manure; and just in proportion as the latter is well or ill supplied, will the crop be abundant or scanty. The very strongest manures, as cow dung, night soil, horse dung, or sewerage water, suit it perfectly. In the latter might be soaked Irish peat charcoal, which *has the power of absorbing a large quantity of water readily, and every thing grows well in it.*

My plan is to form large plantations of rhubarb along the sides of some railway in Cornwall or Devon, and, as in the case of sea-kale and asparagus, if practicable, ground should be chosen for it that slopes to the south, for this will make a difference of *at least ten days in its earliness.* When the land has been selected, dung it heavily, and trench it at least two spits deep. This should be done before the heavy rains of winter set in. Soil of too stiff or too clayey a nature must be avoided, for that would make a difference in the earliness. For the same reason, wet land should not be selected, for that is *at all times 5° colder than well-drained land:* besides, the latter offers facilities for air reaching the roots which wet land does not, and without air, the roots cannot thrive any more than the tops can.

Before making the permanent plantation, it would be well if a large number of the best sorts were previously planted out thickly in a piece of ground, and coming forward; these might be divided and increased with advantage, leaving a bud on each division. This will multiply your stock amazingly, and lessen your outlay for plants. Mr. Myatt plants four feet square, but that is quite a foot too wide for field culture, if no other intermediate crop is intended. The plants ought to be put in alternately, or quincunx fashion, which gives them more air, and the roots fair play. In the first year, something dwarf might be sown between the rows, as turnips for instance. Next year the rhubarb plants will afford a fair picking, and in doing this some leave nothing but the flower stems to draw up the sap, until the last pulling takes place, and then the flower stems are removed; but Mr. Myatt makes it a rule never to pull every stalk off, for that injures the root. It is quite certain that leaves and flower stems are in a great measure formed out of the matter that was stored up in the roots the previous year; and if we cut them off without allowing them to restore to the root that which they have taken from it, we shall have a weaker growth the following year. It is on this principle that the leaves of crocuses and snow drops are never removed by good gardeners, till they have fulfilled their office, and become withered; for if they were, the result would in all probability be no flower next year. Rhubarb roots should therefore never be perfectly denuded of foliage.

At the present time (April 25th) there are many tons being sent northwards daily. All growers might easily have forced rhubarb all the winter, by making trenches five feet broad, and one or two hundred yards long, taking up the roots and packing them in the trench, and putting mould upon them. Hurdles covered

* The region of warm light soil, on the southern slopes of the hills on the north side of Magothy river, in Maryland, would make the best early market garden in the Union, if it had railroad or steamboat facilities.—*Ed. P., L., and A.*

with straw might be placed over all. Nothing more would be needed; but of course it would require immense quantities of roots to replace those that were forced, which should not be thrown away, but cut into eyes and planted again. In order, however, to save the roots where they stand, and still get them earlier, they must be covered with pots, which must be made for the purpose, not less than eighteen inches high and a foot in diameter. They should have no hole at the top, as that would not only let out the heated air generated in the inside by the sun's rays, but would cause the interior to be colder than the external atmosphere. To avoid the expense of pots, covering the crowns with plenty of straw is a good plan to protect it; the straw would afterwards act as a manure to the ground. Many persons prefer rhubarb grown in a half blanched form, they think it more delicate in flavor; one thing is certain, that it does not form so large leaves, and would be easier packed. The mild climate of Cornwall and Devon would however, without any artificial treatment, produce rhubarb fit for use at least five or six weeks before it could be brought to market from any where else; and instead of having five or six weeks' cheap rhubarb, as we now have, we should then have a two or three months' excellent supply. It is now (March 10) selling at 1s. a bunch of from twelve to eighteen heads, which, trifling as it may appear, is such a price that the middle and industrial classes cannot pay.

Ireland, which has the finest land and climate in the world, and which has railways passing from its south to its north, possesses extraordinary capabilities for producing every thing in first rate style. The south could supply the north with early produce; the north again could supply the south with late produce and in this way a long continuance of good and cheap things would be the result. But when shall these things be? When shall that unhappy portion of the British dominions care for its own and its neighbor's interest? Let us hope that it soon will, that the dark cloud which at present hangs over it will pass rapidly away and ere long fair "Erin" will put on a bright and a more industrious and smiling face.*—*Cuthill.*

For the Plough, the Loom, and the Anvil.

RAGS FOR MANURE.

Several years since, while perusing an agricultural publication, I chanced upon an article recommending rags as a manure. The writer, it appeared, had instituted several experiments, all of which had been attended with complete success, and as he had been to the trouble of detailing the *modus operandi* at considerable length, I concluded to test the truth of his observations by an immediate trial.

The soil made choice of for this, to me, somewhat novel experiment, was a light, gravelly loam, the natural productiveness of which had been so greatly diminished by the process of long continued and injudicious cropping, that I had long been on the eve of abandoning it in despair, as the produce was, generally speaking, insufficient to renumerate me for the expense of cultivation. The spring at the time was too far advanced to admit of an experiment with corn, and the patch was ploughed for potatoes; and the entire piece, containing about one tenth of an acre, after being thoroughly harrowed, was struck off into squares by longitudinal and transverse furrows, in order to facilitate the operation of hilling, which I find is much more speedily and economically performed with the single horse-plough, with two furrow-boards, than by the ordinary process of hilling with the hoe. The hills being thus prepared for the reception of the seed, the process of "manuring" was commenced by dropping a heaping-shovel full of stable manure in one hill and as many rags, chopped fine,

* Not while "subject to the policy of the British merchants." The escape of Laocoön from the embraces of the serpent would have been quite as easy.—*Ed. P., L., and A.*

as could be grasped by one hand, in the next, and so on, alternately, till the whole was completed, and the hills ready for the reception of the seed. After dropping this, which was of the hog-horn kind, and bestowed at the rate of four eyes or "*sprouts*" to the hill, on two "cuttings," the labor of covering was performed by a careful hand, and in the ordinary method, with a common hoe. The after culture was extremely simple, and consisted merely in cutting down the weeds, the surface of the ground being kept nearly level, in order to facilitate the descent of water to the roots, till the final hoeing, which was performed almost wholly with the plough. There was one circumstance, however, connected with the growth of this crop, that to me appeared somewhat singular.

From the period at which the youthful plants were first developed, till the day on which they were entirely prostrated, and their vegetative powers arrested by the "*rust*," not the slightest difference was perceptible through the piece; those which had been manured with rags springing as rapidly from the soil, and, to all appearance, with as much vigor and luxuriance of growth, as the rest, while the rags were apparently as firm, and their colors nearly or quite as brilliant as when first inhumed!

The yield was not large; a circumstance which I attributed to the early visitation of the rust, which intercepted their growth in mid-career, and which gave to the entire piece, as well as to most other pieces in the vicinity, the appearance of having been prostrated by a killing frost.

A considerable portion of the tubers, however, were of a medium size, very smooth and handsome, and equal, *in every respect*, to those on which I had bestowed a far more elaborate cultivation, and a richer soil. Had the season been *dry* instead of *wet*, the result would doubtless have been still more favorable. That rags constitute a valuable article for manuring land, there can, I think, be no longer any question. The experiments that have been already made demonstrate conclusively, that, when easily obtainable, their assistance is valuable; their peculiar properties of absorbtion and retention rendering them highly efficient on light soils, particularly where there is an excess or superabundance of sand.

In the vicinity of cities, large quantities of woollen rags can be obtained with ease, and at small expense. So also, in the neighborhood of carpet and other woollen manufactories where large masses of rubbish accumulate in the yards and streets without being appropriated to any use.

In conclusion permit me to present the following extracts relative to the character of wool, from the pen of CHAPTAL:—

"A very good manure is formed from wool. According to the ingenious experiments of Mr. Hatchett, hair, feathers and wool are only particular combinations of gelatine, with a substance analogous to albumen; water can only dissolve them by means of fermentation, which takes place slowly, and after a long time. One of the most surprising instances of fertility that I have ever seen, is in a field in the neighborhood of Montpellier, belong to a manufacturer of woollen blankets. The owner of this land causes it to be dressed every year with the sweepings of his workshops; and the harvests of corn and fodder which it produces are astonishing.

"It is well known that from the hairs of wool transpires a fluid which hardens upon their surface, but which possesses the property of being easily soluble in water. This substance has received the name of animal sweat; the water in which the wool has been washed contains so much of it as to render it very valuable as manure. I saw, thirty years since,

a wool-merchant in Montpellier, who had placed his wash-house for wool in the midst of his fields, a greater part of which he had transformed into his garden. In watering his vegetables he had used no other water than that of these washings; and the beauty of his productions was so great as to render his garden a place of public resort. The Genoese collect, with care, in the South of France, all they can find of threads and rags of woollen fabrics, to place at the foot of the olive trees. According to the analysis of M. Vauguelin, this animal sweat is a soapy substance, consisting of a base of potash, with an excess of oily matter, and containing, besides some acetate of potash, a little of the carbonate and of the muriate of the same base, and a scented animal matter." The scientific agriculturist will readily perceive *why* an article, composed of such ingredients, should act favorably on the soil and crop.

ON THE CULTIVATION OF TOBACCO.

(*Continued from the February Number, page* 494.)

We now proceed with the "*Notes on the Cultivation of Tobacco*" by that excellent planter and yet better man, the late Peter Miner of Albemarle, Virginia.

OF THE PREPARATION OF THE LAND, AND CULTIVATION OF THE CROP.

The best tobacco is made upon new or fresh land. It is rare to make more than three successive crops upon the same ground, of which the second is the best, the first and third being about equal. But it is more common to make only two. The new land, after all the timber and brush is removed, and the surface very cleanly raked, is twice closely coultered as deep as two horses or oxen can pull. After this, hands with grubbing hoes pass regularly over the whole ground, and take up all the loose roots that have been broken by the coulter, which are heaped and burnt, or removed. One, and sometimes two more coulterings are then given, and the same operation repeated with the grubbing hoes, which leaves the land in proper order to be hilled: this is universally done in straight rows at the distance of three and a half feet apart, giving the same distance, as near as the eye will permit, the other way; in *fresh* land, that is to say, for the second and third crop, the line of the original row, and even the locality of each hill should be preserved. After passing the coulter two or three times between each row, the hills should be made in the same place, the remains of the stalk and roots of the plant being first removed. It is supposed, from the excess of nitrous particles contained in tobacco, above any other plant, that the partial decomposition of this stubble during the winter imparts a degree of f rtility to the spot which should not be lost by the diffusion and exposure of a general ploughing. It is most advisable, too, that the hilling of new and fresh land should be done as early in the spring as possible, say three or four weeks before planting. This affords time for the hill to settle to a proper consistence, and presents a more extended surface to be acted on by atmospheric influence, which perhaps is greater in the spring months than at any other season of the year.

On the bottom land of our rivers there are extensive alluvial flats that bear successive crops of tobacco for many years, and some planters resort to highly manured spots conveniently situated upon high land. But in general, it is considered bad economy to manure land for tobacco, both because the quantity required for that crop is greater than for any other, and because the quality of the product, as well as that made on low grounds, is coarser in fibre and less marketable. The preparation of such land, however, is the same as that of new ground, except that the large plough and harrow are substituted for the coulter and grubbing hoe, and the hilling may be a little longer delayed.

If the seasons have been favorable, and the plant beds duly attended to, as before observed, the plants will be ready to be set out from the 15th to the last of

May. It is most common to wait for rain, or *season* as we call it, to perform this operation, in which case the hills must be previously cut off about four inches above their base; but in early planting it is quite safe to proceed without a season, provided it is done in the evening, and the hills cut off at the same time. It is universally admitted that a moderate season is better than a very wet one; and that is considered the best, in which the earth does not entirely lose its friability, but at the same time will bear to be compressed closely about the roots of the plant without danger of becoming hard or baked. Under the most favorable circumstances, however, some plants will fail or perish, and therefore the ground must be gone over after every rain until the last of June to replant the missing hills. It is not important here to describe the mere cultivation of the crop as it respects tillage, it being only necessary, as in the case of all other plants, to keep the earth light and free from weeds and grass. This is generally done by two weedings, first by scraping a little earth and all the young grass from the plants, and then in a short time restoring the same earth, and as much more as will make a considerable hill around each. In old land, and that free from stumps, the single-horse shovel-plough is used with great advantage as an auxiliary to the hoe.

When the plants attain a proper size, which observation and experience will readily point out, they are to be primed and topped. The priming is merely stripping off four or five leaves at the bottom, leaving about a hand's breadth between the first leaf and the top of the hill. Topping is simply taking out the bud with the finger and thumb nails, leaving the necessary number of leaves, which in general is not more than eight, though the first topping may be to nine or ten leaves to make it ripen more uniformly, and bring the crop into the house more together. For the same reason, the late plants are not topped to so many, falling from eight by degrees as the season expires, down to six and five. A little practice, and slight attention to the manner in which the leaves grow from the stalk, will soon enable a person to perform this operation with great dexterity and dispatch, without counting the leaves. All that is requisite after this until the plant is fit to cut, is to keep it from being eaten by the worms, and to pull off the suckers that grow out at the junction of the leaves to the stalk. These suckers put forth only twice at the leaves, but after that indefinitely and continually from the root; and it is thought injudicious ever to let them get more than a week old, for besides absorbing the nutriment necessary to push forward, and increase the size and thickness of the leaf, the breaking them off when of a large size makes so great a wound as greatly to injure the after growth of the plant. In general, about three months is requisite to perfect the growth of tobacco, from planting to cutting.

OF THE DISEASES AND CASUALTIES TO WHICH IT IS SUBJECT, AND ITS TENDENCY TO EXHAUST LAND.

Tobacco is subject to some diseases, and liable to be injured by more casualties and accidents than any other crop. That growing upon new or fresh high land is seldom injured by any other disease than the *Spot* or *Firing*, which is the effect of very moist succeeded by very hot weather. For this we know of no remedy or antidote. Tobacco growing upon old land, particularly upon low flats, besides being more subject to Spot, is liable to a disease we call the *Hollow Stalk*, which is an entire decay and rottenness of the inside or pith, terminating gradually in the decay, and final dropping off of the leaves. This disease is sometimes produced by the wounds caused by pulling off overgrown suckers, thereby admitting too great an absorption of water into the stalk through the wound. In land not completely drained, the plants are sometimes apt to take a diminutive growth, sending forth numerous long, narrow leaves, very thickly set on the stalk. This is called *Walloon* tobacco, and is good for nothing. As there is no cure for these diseases when they exist, we can only attend to their prevention. This will at once be pointed out by a knowledge of the cause, which is too much wet, and indicates the necessity of complete and thorough draining before the crop is planted. It may not be amiss here to mention, that tobacco is more injured than any other crop by ploughing or hoeing the ground when it is too wet, and to express a general caution on that head.

The accidents by which tobacco is often injured and destroyed, are high winds, heavy beating rains, hail storms, and two kinds of worm, the ground or cut worm, and the large green horn worm. High winds, besides breaking off the leaves and thereby occasioning a great loss, are apt to turn them over. The plant, unlike most others, possesses no power to restore the leaves to their proper position, which must shortly and carefully be done by hand, otherwise the part inverted will gradually

perish and moulder away. Those who have studied the anatomy of plants can tell us the cause of this, as well as why nature has denied to tobacco the faculty of restoring its leaves to their proper position. The ground worm, the same which is sometimes so fatal to corn, is ascertained to be the larvæ of the common black bug found in great numbers under wheat shocks, &c. This worm is seldom or never found in new land, but abounds in old or manured ground; and in some years I have seen them so numerous, as to have from forty to fifty taken out of one hill in a morning. The alternatives are either to abandon the crop, or to go over the ground every morning, when they can be found at or near the surface, and destroy them. The missing hills to be regularly replanted. The horn worm is produced from a large, clumsy, gray colored fly, commonly seen late in the evening sucking the flowers of the *Stramonium* or *Thorn-apple*, commonly called here the *Jamestown Weed*. The flies deposit their eggs in the night on the tobacco, and all other narcotic plants indiscriminately, as Irish potatoes, tomatoes, &c. In twenty-four or thirty-six hours the eggs hatch a small worm, which immediately begins to feed on the leaf, and grows rapidly. Great care should be taken to destroy them while young. Turkeys and Guinea fowls are great auxiliaries in this business, but the evil might be greatly lessened if the *flies* were destroyed, which can easily be done in the night by a person walking over the ground with a torch and a light paddle. They will approach the light and can easily be killed. In this way I have known a hundred killed in one field in the course of an hour.

Tobacco has been reproached as the cause of the general exhausted condition of our lands, of the slow-paced improvement in the Virginia system of agriculture; in short, as the bane of all good husbandry. This stigma is, I am persuaded, in a great measure unmerited. It is true, that like Indian corn, from the frequent and high degree of tillage it requires throughout the summer, it exposes the ground to be washed by hard rains, and evaporated by the hot sun; but the plant in itself is less an exhauster than corn or wheat. A proof of this is to be found in the superior growth and perfection to which any crop will arrive when grown after tobacco, than after any thing else, not excepting clover that has been ploughed in. Perhaps this may be accounted for from the facts, 1st. That the roots and stubble of tobacco left on the ground are more in quantity, and contain more of the essential qualities of manure, than those of any other plant; 2d. The plant itself while growing feeds more from the atmosphere than any other; and 3dly. It is not suffered to go to seed, the process in all vegetation which is supposed to make the greatest draft on the fertility of the earth. Neither is the culture of tobacco incompatible with a proper rotation of crops, and an improved system of husbandry, for we find as extensive and as successful efforts at improvement made in the tobacco region, and by tobacco makers, as in any other section of our State.

NEW BOOKS.

A Treatise on the History and Management of Ornamental and Domestic Poultry. By Rev. Edmund Saul Dixon, A M. Illustrated with many original portraits, &c. 1 vol., pp. 480, 12mo.

This appears to be really a good book. The author has gone deep into the mystery of Fowl-raising, and the fact of its having gone through two editions in England speaks well for it. Published by E. H. Butler, Philadelphia.

Knowlson's Cow and Cattle Doctor, is the title of a little book of 64 pages, sent to us by T. B. Peterson. Price 25 cents.

The Fruit, Flower, and Kitchen Garden. By Patrick Neill. Adapted to the United States. From the fourth edition, pp. 427. Philadelphia: Henry Carey Baird. 1851.

This admirable little book, which has been introduced to the American public in so neat a form, is just what is needed. Small but comprehensive, the matter is treated on by one who evidently understands his subject. That part which treats on the culture of the Vine appears to be particularly valuable. Indeed the book should be in the hands of all who either for pleasure or profit are interested in so beautiful a subject as the cultivation of flowers, or the more useful one of fruits and vegetables.

The Plough, the Loom, and the Anvil.

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WHO PAYS THE DUTY—THE PRODUCER OR THE CONSUMER?

This is a question not unfrequently asked by those who desire to understand for themselves the working of the protective system, by means of which we seek to arrive at real and perfect freedom of trade.

It is now about four years since it was answered by the then Secretary of the Treasury in an elaborate report, in which the nation was assured that every ton of coal mined in the Union was sold at *one dollar and sixty cents more* than it would sell for under a system of perfect freedom of trade, althongh the average price of coal, at Pottsville, Mauch Chunk, Lackawanna, and Pittsburg, did not exceed *one dollar and fifty cents.* They were thus assured that the tax paid by the consumer was *more than the whole price* he paid for his fuel. The tax paid by the consumer of a ton of nails was set down, if we recollect rightly, at about ninety dollars, being nearly the whole price paid for them; and in this manner there was made up an exhibit of taxes amounting to about a hundred millions of dollars. The object had in view in making a statement like this was accomplished, and the tariff of 1846 was passed. How far it was entitled to have received even the slightest consideration, we hope to enable our readers to judge for themselves.

The prices of commodities in the general market of the world are, as our readers well know, dependent on the proportion which the supply bears to the demand—rising as the quantity diminishes, and falling as it increases. The rapid increase in the supply of cotton since the introduction of its cultivation into the Union has caused a great reduction in price. Let us abandon its cultivation, and it will then again command thirty or forty, if not even fifty cents per pound. With a large crop of grain, the price falls; with a small one, it rises. So is it with sugar, coffee, wool, indigo, and every other of the commodities required for the use of man.

Increase of supply tends thus to diminish the general price—diminution to increase it. If protection tends to promote increase of supply, it must tend, then, to produce diminution in the general market price, and that diminution constitutes an offset against the duty. If the diminution be equal to only a part of the duty, the remainder is paid by the consumer, against which he has to set off the profits resulting from bringing the market for his produce to his door, and the gain resulting from the power to restore the manure to his land, and from being enabled to apply labor that would otherwise have been wasted. If the diminution in the general price be equal to the whole duty, then the whole amount of duty falls upon the foreign producer, and the domestic consumer pays nothing, *while profiting largely by the domestic market furnished him by the men whose competition has compelled the reduction in the foreign price.*

In 1842 the domestic production of iron but little exceeded 200,000

tons, and there was reason to believe that it would speedily fall much lower. Five years afterwards, under the action of the tariff of '42, it had reached 800,000 tons. The quantity of iron in the general market of the world had been largely increased by the protection that had been afforded to the domestic producers, and to our increased power of production is unquestionably due the low price to which the foreigner is now compelled to submit, that he may obtain an entrance into our market. Abolish the existing duty, and we shall cease altogether to make iron, the consequence of which will be that the supply in the market of the world will be so greatly diminished, that the price will rise far more than the duty, and thus the foreign producer will pocket what the treasury ceases to receive. If so, it must be obvious that the duty is now paid by the foreign producer, and that the only effect that could result from its abolition would be that of transferring to the consumer the tax now paid by the producer.

In 1847 we consumed almost a million of tons, of which 800,000 were made at home. Had the tariff of 1842 remained untouched, we should now produce at home 1,250,000 tons. Were we to abolish all protection, closing the furnaces at once instead of doing it by degrees, as we are now doing, it would be necessary to import at least 1,100,000 tons to enable us to consume as much per head as we did in 1846–7. At what price could that quantity be supplied? Certainly not less than £10 per ton; and the cost delivered here, duty free, would not be less than $60. The abolition of all duty would thus inevitably raise the price, because it would diminish the general supply. Were we, on the contrary, to raise the duty to $20, the price *could not rise above* $50, because every furnace in the country would be re-opened, and the general supply would be largely increased; the effect of which would be to cause a diminution of prices in foreign markets, even below their present point, for while competition is maintained, the foreign producer *must* pay the duty.

Thus far our iron-masters have struggled to maintain competition, and the supply in the general market has been large, the consequence of which is seen in the present low prices. With another year the mass of the remaining furnaces will go out of blast, and then, the supply in the general market being greatly reduced, the price will rise to a point so high as greatly to diminish consumption, for we certainly cannot pay for even half a million of tons of foreign iron at a cost of $60 a ton. The choice presented to us for consideration appears to us, then, to be this:—

First. To abolish the duty altogether, and close at once all our furnaces, importing from abroad our whole supply at a cost, including freight and charges, of sixty dollars per ton.

Second. To maintain our present system, closing our furnaces by degrees, and thus diminishing the supply to a point at which prices abroad will rise to £7 10s. or £8, and the consumer will pay $50, until the next period of speculation, when he will pay $60 or $70, if not $80.

Third. To raise the duty so as to afford real protection, enabling the consumer to obtain his iron now at $50, with a certainty of its reduction to $40, or even less.

In the first case, the consumer will pay $60, and the treasury will receive nothing. In the second, he will pay $50, and the treasury will receive $10. In the third, he will now pay no more, and the treasury will receive $20.

That this view is the correct one, we entertain no doubt. The question we have undertaken to answer will, however, be answered for himself by each and every one of our readers, after giving due consideration to the following:—

At what price *can* we be supplied from abroad with 1,100,000 tons of iron, freight and charges paid, and duty free? *Can* it be less than $60?

At what price *must* our iron-masters supply us with the same quantity, under a duty sufficiently protective (say $20 per ton) to open all the furnaces of the Union? *Can* they, under existing circumstances, obtain the market at more than $50 per ton?

Having answered these questions, as we feel assured they must, in the negative, we would then ask our readers to determine, if they do not settle the question that it is the foreign producer of iron that pays the duty, and if the consumer is not, under the protective system, supplied at a cheaper rate than he would be were all protection abolished?

It may, perhaps, be asked, "If prices rise abroad, will not our old furnaces be re-opened, and will not new ones be built?" In answer to this we have to say, that when the furnace-master has been ruined, and his furnace has been transferred by the hands of the sheriff, the power to re-open it does not not exist. Abolish the tariff, and we hazard little in saying that there will not be found in the Union a single man willing to enter into competition with men like the British manufacturers, whose motto is, "Rule or ruin." We shall hereafter have occasion to exhibit specimens of the enormous extent of reduction that is submitted to, so long as there exists even a hope of ruining their competitors, and securing our market to themselves.

Among our readers there is not a single farmer that does not know that the cost of going to market falls on himself, the producer of the things for which a market must be sought. Give him a turnpike, and he saves part of the cost of transportation, the consequence of which is that his land rises in value. Give him a railroad, and it rises again. From day to day we see accounts of increase in the value of land resulting from the opening of roads, by means of which the cost attendant upon seeking a market has been diminished.

The first thing to be paid by land is transportation. When that is so great as to eat up the whole proceeds, the land will remain uncultivated. Diminish the cost of transportation so as to leave sufficient to pay the wages of labor, and it will be cultivated, but it will pay no rent. Diminish it further, so as to leave a surplus over and above the reward of the laborer, and the land itself will acquire value. Diminish it still further, by removing altogether the necessity for transportation, making a market on the land for all the products of the land, enabling the farmer readily to return to it all the refuse of its products, and it will acquire the highest value of which land is capable. The increased price paid for land wherever roads are made, or being made, is an admission on the part of those who purchase, that the expense of getting their agricultural products to market falls upon and is paid by the producer, who has to bear the cost of transportation, and, as a part of it, any duties levied at the toll-gates on the way.

The only difference between the raw material—the first rude product of the land—and the same material transformed and combined with others in the shape of manufactured fabrics, is, that in the production of the former there is universal competition. When we subject foreign

manufactures to duties, with a view to the production of domestic competition, the law applies in all its force; and the foreign producer must get to market at his own cost, paying all the tolls and duties out of his own pocket. When it is not so, whenever the consumer has to go away from home for the articles he desires to purchase, he pays his own expenses, the cost of transporting the raw material which he brings to exchange, and that of carrying back with him the cloth or iron he obtains in payment, as well as the duties levied upon them. Whether we are right or wrong in these views, let the facts answer.

A quarter of a century since we mined scarcely any coal, and the price of foreign coal was then eight or ten dollars per ton. In 1842 we mined a little more than a million of tons. In 1847 the quantity had reached three millions of tons, and the selling price was less than half what it formerly had been, and yet the quantity imported was five times as great. It is thence obvious that the foreign producer had reduced his price to conform to the American one.

In 1842 the duty was twenty per cent., being perhaps seventy cents per ton, and we then imported 141,000 tons. In 1846 the duty was $1 60, and we then imported 156,000 tons. The selling price having remained nearly the same, it is clear that the foreign producer carried back with him just so much less per ton as the duty had been increased—that is, that he had paid the additional duty.

The quantity of coal in the general market of the world has been largely increased by aid of protection, and hence it is that prices have fallen. Let us now suppose the tariff totally repealed, and protection abolished, and see what would be the effect. It is clear that the foreign producer was willing in 1846 to sell at our market prices, and pay the duty himself. The abolition of the duty would enable him, if he continued to sell at the same prices, to put into his pocket an additional $1 60 per ton; and if he reduced his price eighty cents, he would still receive eighty cents per ton more than he did before. Such a reduction would close half the coal mines of the country, and the closing of furnaces and cotton-mills would close the remainder. For a little time competition would be maintained, but as the foreign supply would steadily increase, and the domestic demand as steadily decrease, the inevitable effect would be to ruin every man and every company now engaged in producing coal for market.

At what price could we then purchase from abroad three million tons of coal, the quantity brought to market in 1846? Could we have it at $4—or $5—or even $6? We could not. Admitting, however, that we *could* have that quantity as cheaply as we now have it, let us inquire at what price we could have the five millions we should need this year, had not the tariff of 1846 closed our furnaces and our mills. The transport of that quantity would require about 1,250,000 tons of shipping, and freights would be high. The British coal owners, having the monopoly of the market, would fix the price, and that would be high; and the result would be, that to obtain five millions of coal would require from thirty to forty millions of dollars under a system of perfect "free trade;" whereas, under a system of perfect protection, the same quantity could be supplied for less than twenty millions. Who is it, then, that now pays the duty? When we see that the abolition of protection would put up foreign prices to an extent fully equal to the duty, is it not obvious that the duty is now

paid by the foreign producer, and constitutes a part of his cost of production? To us it certainly seems that such is the case.

In 1841–'2 we consumed little more than 300,000 bales of cotton. Five years after we consumed 600,000 bales. The supply of cotton cloth in the general market of the world had largely increased under protection, and the consequence was a great reduction of price, as we shall now show by aid of the tables appended to the Treasury Report of 1847:

	Merrimack blue prints.	No. 10 checks.	York colored cottons.	Drillings.	Chicopee sheetings.	Bartlett long cloths.
1841	13¼	13½	14	9½	8.62	12
1842	12	12½	12	8¼	7.08	10½
1843	11	11¾	12	7⅞	7.37	10¼
1844	11	13¼	13½	8⅛	8.16	11½
1845	11¾	13¼	13	8½	7.67	10½
1846	11¼	12½	12¾	8¼	8	10

The total repeal of the tariff would close every mill in the Union. Many may doubt this, yet such would be the fact, although we can now manufacture heavy cottons at lower prices than any people in the world. The first effect of such a measure would be to close the furnaces and the mines, the woollen mills and the hatters' shops, and thus diminish the market for cottons. The discharged workmen would be unable to purchase their usual supplies of food, and thus the power of the farmers to purchase cloth would be reduced. The price of cotton would fall heavily, and the power of the planters to purchase clothing would be reduced. The price of wool would also fall heavily, and the power of the wool-growers to purchase cloth would be reduced. With this immense diminution in the domestic market, there would be an immense increase in the supply from abroad, and the result would be, as we have said, to close every mill in the Union, north or south, east or west, not to be re-opened until wages should have fallen to the European level, if even then, which we deem most unlikely.

The effect of this would be to diminish immensely the supply of cotton cloth in the market of the world, and thereafter to raise its price so greatly that consumption would fall to less than 200,000 bales. At what price could we be supplied with the 600,000 bales of cloth we now make? Could it be done at an advance of fifty per cent. on the present prices? It certainly could not. Is it not, then, obvious that the way to raise prices is to abolish protection, and relinquish to the English manufacturer the entire control of the markets of the world, for which he is now contending, and thus enable him, the foreign producer, to put into his pocket the sum that he now pays into our treasury; and that the way to lower them is to afford that perfect protection which will cause the re-opening of the mills now closed, and the building of new ones throughout the South and West, and thus increase the supply of cloth in the general market of the world? With us there is not a shadow of doubt as to the true answer to be given to this question.

To our cotton-growing friends it is one of serious importance. It is time that they should rid themselves of the errors resulting from the idea of incidental protection, and examine for themselves what would be the effect of an entire repeal of the whole tariff system, and the establishment of perfect free trade, as it is the fashion to call the maintenance of the English monopoly system. If such an examination should, as it would, result in satisfying them that under such a system the domestic manufacture of

cotton goods would be here as impossible as it now is in Ireland, Canada, or India, let them then reflect what would be the price after Great Britain had re-established her monopoly of our market, and then determine for themselves who it is that now pays the duty. Having so done, let them seriously ask themselves for an answer to the question: "Is there any road to perfect freedom of trade except that which leads through perfect protection?"

In 1841–'2 we consumed about *fifty* millions of pounds of wool. It is somewhat doubtful if it was even so much. Four years after, our consumption exceeded *eighty* millions. The effect of this increase in the supply of woollen cloths in the general market of the world was a universal reduction of price, as may here be seen:—

	Hamilton broadcloth, 4th quality.	Hamilton broadcloth, 6th quality.	Middlesex cassimeres.	Blue satinets.	Andover flannel.	Brown M. de Laines.
1841	$2 75	$2 25	$1 70	71c.	27c.	
1842	2 50	1 87½	1 50	62	20	
1843	2 25	1 87½	1 50	52	23	15cts.
1844	2 35	2 00	1 40	70	30	13
1845	2 37	2 00	1 35	70	26	13½
1846	2 25	1 70	1 30	60	24	12

	Cotton and Wool Linseys, white.	Fine Carpetings.	Army Clothing.
1841	22cts.	70cts.	$2 48
1842	20	65	2 43
1843	20	62½	2 19
1844	20	67½	2 30
1845	24	65	2 22
1846	21	65	2 10

It is clearly obvious that with the increased production the domestic price had greatly fallen, and that the foreign producer was paying *a larger sum in the shape of duty*, out of a *diminished gross receipt*. He, certainly, was here the payer of the duty. If not, who was? Certainly not the consumer, for he was, under a system of efficient protection, obtaining his cloth cheaper than he had ever done. Protection had certainly thrown the payment of the duty on the foreign producer.

Let us abolish protection, and see what will be the result. It will close every woollen mill in the Union, and then we shall need to go abroad for eighty millions of pounds of woollen cloths. What, then, will be the price? Will it not advance rapidly, as the supply is diminished? Unquestionably it will, and the result will be, that while the treasury will receive nothing, the consumer will pay as high a price as formerly.

It is a common idea that prices abroad have a natural tendency to fall, and that they would fall whether we manufactured or not. How far this is correct, may be seen by an examination of the following prices of articles which we do not manufacture, and for which we are wholly dependent upon Europe:—

	Closet locks per doz.	Wrought iron pans per lb.	Vises per lb.	Files, 12 in. per doz.	Hollow wares, discount.
1839	$1 56	7.7	5⅜	$3 33	p. ct. 47½
1840	1 36	7.7	5¼	3 33	47½
1841	1 26	7.7	5¼	3 13	47½
1842	1 17	7.7	5¼	3 13	50
1843	1 04	7.7	5¼	3 13	55
1844	1 53	7.7	5¼	3 13	
1845	1 53	8.2	5¼	3 35	50
1846	1 56	8.4	5⅜	3 35	50
1847	1 56	7.7	5¼	3 20	50
1848	1 26	7.7	5¼	3 20	50
1849	1 17	7.2	5¼	3 13	50

Bajou's Paris kid gloves, which from 1839 to 1841 were at 25 francs per dozen, have *advanced* in the period that has since elapsed to 26, 27, and 28 francs, at which latter price they sold last year. In the same period there has been no change in silk goods, except as they have varied from the abundance or the scarcity—the low or the high price—of the raw material. An extensive importer of French china informs us, that in the last ten years the reduction of price has not equalled *one per cent. per annum*. Let this be compared with the reduction that has taken place in all the articles which, *by reason of the grant of adequate protection*, are extensively made in this country, and then let it be determined who it is that pays the duty.

In 1843 the export from England of tin plates was 300,000 boxes, at 26s. 6d. ($6 36) per box. In 1850 it was 800,000 boxes, at 36s. ($7 92) per box, for the same quality. Here is an additional charge of $1 56 per box, which upon 800,000 boxes amounts to a tax of $1,250,000, paid by the consumers of tin plates, because of the monopoly power exercised by Great Britain. It would be well if some of the advocates of the British monopoly system would explain why it is that all the articles we cannot or do not manufacture maintain their price, or even rise, while all those we protect, and therefore do manufacture, fall so much in price that they are invariably cheaper under the high duty than they had been under the lower one. That done, they will be enabled to explain to the farmers and planters who it is that really pays the duty, and how much is the true amount of taxation they are now paying for the maintenance of the British system.

The only circumstance that *can* cause reduction of price is competition, producing an increased supply in the general market of the world; and where that competition does not exist, there is little or no tendency to reduction. Whence is that competition to come? From the countries that have free trade with England—from Ireland, Canada, India, or Portugal? Certainly not. Not only can they not produce, but they are unable even to consume. Whence, then? The answer is to be found in the fact that the only competition with England is to be found in Belgium, which maintains protection—in the *Zoll-Verein*, which maintains protection—and in this country, which did for a time grant efficient protection, but now grants that which is inefficient, and calls it revenue duties.

Prior to the establishment of the *Zoll-Verein* the consumption of cotton by Germany was trivial. It is now immense, and rapidly increasing, and she exports her products to every part of the world, *because protection has made them cheap*. Sheffield now complains that, instead of exporting cutlery *to* Germany, she now is *undersold by Germany* in

every market of the world. Leeds complains that she is undersold by both Belgium and Germany, and Manchester complains that protected America undersells her even in India. If protection raised prices on the consumer, such things as these could not happen.

We have before us a statement of the movement in regard to the prices of pins, that illustrates so fully the payment of the duty by the British producer, that we desire to call to it the attention of our readers :—

	Pins No. 4.	Mixed pins.
1835	1 12½	
1836	1 04	
1837	85	
1838	80	
1839	80	45
1840	80	45
1841	75	45
1842*	62½	40
1843	55	35
1844	50	35
1845	45	35
1846	42½	32

We see here the foreign producer steadily reducing the price, and thus taking upon himself the payment of the duty, until at length it leaves him so little that he is compelled to abandon the contest, and from that moment the price diminishes still more rapidly than before. In the six years following 1836, the reduction was but about twenty per cent.; whereas, in the four pears following 1842, it was above thirty per cent. Let us repeal the duty, and close our pin factories, and we shall speedily see the price back to the point from whence it started in 1836, and then we shall have it conclusively determined who it is that now pays the duty.

It is the payment of these and other duties that is now ruining England. Germany and the United States were her largest customers, but both have resorted to protection; and the consequence is, that the British monopoly is rapidly passing away. The supply of cotton and woollen cloth, of iron and manufactures of iron, and of various other commodities, in the general market of the world, has rapidly increased, the consequence of which has been a general fall in the prices of every thing in which competition has been thus established. The *increase* of duties on importation into both Germany and this country having been attended with *diminution* of the market prices in both, it has followed that the British manufacturer has been compelled to pay the higher duty out of a diminished price, the result of which has been that British prices have been driven down to so low a point that the wages of labor have been considerably diminished, while much of her capital employed in the manufactures has yieded no profit whatever. Nevertheless, Britain is determined, at whatever sacrifice, to be "the workshop of the world," and the ruinous game in which she has so long been engaged appears likely to be fairly played out. From year to year her power of purchase diminishes, and, since she determined upon sacrificing her agriculture, in the hope of inducing other nations to release her from the payment of the duties by which their governments are maintained, her decline has been more rapid than at any former period. She has yearly more peo-

* Here importation ceased.

ple to feed and clothe, and yearly a less amount to do it with; and yet it is for the purpose of obtaining the privilege of feeding and clothing these people—a large portion of whom never see animal food, and never purchase a new article of clothing—that our farmers and planters have been called upon to forego the advantage of making a market on the land for the products of the land, by bringing to their sides prosperous consumers, able to purchase abundant supplies of both food and clothing.

The radical error of the ad valorem system, as it now stands, is, that it fixes only the *proportion* of the Government, leaving the *quantity* to be fixed by others; thus making it the interest of all who deal with us to undervalue their goods, for the purpose of defrauding the treasury, and thus throwing on the consumer the payment of the duty. The Government must be supported, and whatever is not paid by the foreigner, must be paid by ourselves.

Had *prices* been determined at the same time that proportions were fixed, the *quantity* to be received by the Government would have been an uniform one, and all the grievances to which we have called attention would have been prevented. It would then have been easy to graduate the proportions so as to meet the demands of the Government, raising the rate of duty if more revenue were needed, or depressing it if more were raised than was required.

The English manufacturer himself fixed the price of vises *in our market.* He was willing to place there one hundred pounds for the sum of $5 25, out of which he paid the duty, whether high or low. He placed hollow ware there at a discount of fifty per cent., paying himself the low duties of 1841–'2, the high ones of 1843 to '46, or the medium ones of 1848–'9.

Let us suppose the prices to have been then so fixed, and see what would then have been the effect on domestic competition. The sum paid by the foreigner would have been $1 57½, and it would be payable on every one hundred pounds imported, whatever the price at which the foreigner might see fit to invoice his goods. The Government would not have found itself leagued with him for the destruction of that competition which can alone destroy monopoly and establish freedom of trade. It would, in effect, have said to him, "You have fixed the price at which you are willing to supply your goods, and we have fixed the proportion of that price which *you must pay* into our treasury. We will not increase that proportion for the purpose of aiding our own citizens to drive you out of our market, but, on the other hand, we will not reduce it to enable you to ruin him. Ruin him if you can. Our policy is non-interference. We believe that freedom of trade and reduction of prices will be promoted by competition, and we are not favorable to the idea that we should aid you in the destruction of our enterprising citizens who desire to establish here new modes of industry."

The market prices of 1846—the period at which the present tariff became a law—were those at which England was willing to supply us with cloth and iron, and out of those prices she herself paid the duty; and to permit her to pay less than she then paid was to transfer to our own shoulders the burden which we then decreed she should carry—to make the consumer pay what was intended to be paid, and was then paid, by the producer. Had those prices been established, the Government would have

placed itself in a position of non-interference between the foreigner and our own citizens. By not establishing them it has made itself the ally of foreigners in a most destructive warfare on our own people, and in a war against morals, by offering a bounty on perjury and fraud. By now correcting the error then committed, we shall accomplish four great objects: first, that of ridding ourselves of a system of fraud; second, that of enabling the Government to determine for itself the quantity that shall be paid; third, that of replacing the payment on the shoulders of the foreigner, to whom it properly belongs; and, lastly, and most important, the Government will cease to lend its aid to that foreigner in his efforts to crush our own citizens for the purpose of maintaining a monopoly, the direct effort of which is to compel us to give for his commodity far more food, cotton, or tobacco than we should have to give were competition once fairly established.

It has been seen, that notwithstanding great changes of our revenue system, the market price of articles in which we *do not* maintain competition has remained almost unaltered. Thus, in 1842, under a mere revenue duty, vises sold at $5 25 per hundred pounds, and the discount from the list of prices of hollow ware was fifty per cent. In 1843 and 1844, the price of the one and the discount of the other were precisely the same. It is clear that the producer here paid the difference, and that *the effect of raising the duty was to throw it upon him.* In 1848 and 1849 the prices and discounts were precisely the same as in 1842, although the duty was one half higher. From this it would appear that the true mode of throwing the duty on the consumer is to lower the rate, and that the true mode of putting it upon the producer is to raise it; and that the chief question to be settled is, whether the foreign manufacturer shall have a large share of the market price and the treasury a small one, or the former a smaller and the latter a larger one. The consumer appears to have his commodity at the same price, whether two, three, or four tenths of it go into the public coffers; and thus it is that by protection the means for supporting the Government are made to be furnished by foreigners, whereas, under what is called a revenue system, they must be supplied by ourselves.

We may now look to the working of the *ad valorem* system, with a view to see how far it tends to throw the maintenance of Government upon foreigners or upon ourselves—and how far it tends to maintain, or to destroy, the competition which is essential to that perfect freedom of trade which it is the object of Whig policy to bring about.

We have seen that, owing to deficient protection here, England has thus far been enabled to maintain her monopoly of the supply of vises and hollow ware. We have also seen that *our* market prices remain unchanged under various rates of duty, the *foreign* price being adjusted to meet the greater or less demands of the treasury. Let us now suppose an enterprising citizen to undertake the manufacture of those articles, and see what would be the effect. The foreign manufacturer would at once reduce his prices ten per cent. in hopes to crush the infant enterprise, *and the Government would step in to aid him by a corresponding reduction of duty*, so that the total fall would be thirteen per cent. If that failed to answer the purpose, there would be a foreign reduction of twenty per cent., to which the Government would add six, making a total of twenty-six. At the next step it would be thirty, to which the Government would

add nine, making thirty-nine in all; and at the following one it would be forty, with an addition by the Government of twelve, making in all fifty-two; and the result of this combined effort of the foreigner and the Government would probably be, this time, the accomplishment of the object in view—the annihilation of competition, and the re-establishment of perfect monopoly; after which prices would go back to the point from whence they started. During all this time the consumer had *gained* by the reduction, but he had *lost* as a citizen, because of the relinquishment by the treasury of so large a portion of its dues; but with the close of the competition he would cease to gain, and would do so precisely because the treasury had not continued to collect the same amount of contribution from the foreigner. Had the duty been specific, the treasury would have taken always the same sum, and the whole would then have been paid by the producer, who would have been unable, unassisted, to destroy his competitor; whereas, under the *ad valorem* system, the treasury had divided with the foreigner a loss incurred for the express purpose of breaking down domestic competition, and thus throwing on the consumer the whole burden of the duty.

Four years since, the lowest price at which England would supply us with iron was £10, and the duty being fixed at thirty per cent., its amount was $14 40. The rapid growth of our iron manufacture bid fair speedily to shut her out of our market, and she has incurred great sacrifices with a view to avert this catastrophe. The price fell to £8, and the Government contributed one fifth of the duty towards the accomplishment of the good work of ruining our own owners of forges, furnaces, and rolling mills. Again the price fell, and again the Government made a contribution. It is now supplied at less than £5—*being far less than the actual cost of production*—and the Government contributes about $7 50 per ton, in reduction of duty, to enable the foreigner to keep up the murderous warfare that appears destined to result in the entire ruin of a branch of industry quite as important to the country as the culture of cotton, almost equal to it in amount, and that was growing with a rapidity never equalled in any department of industry in any country of the world.

It is the first time in the history of the world that any Government has made its whole revenue system dependent entirely on papers prepared abroad—and the first, as it is likely to be the last, that a Government has been seen leagued with foreigners for the destruction of all its men of activity and enterprise.

It is, too, the first time in the history of the world that a body of intelligent farmers and planters, recognizing by their actions that they it is that *must* pay the cost of going to market with their products, have aided in the maintenance of a policy having for its object the infliction upon them of a necessity for going to a distant market when they might have a near one.

Potato Rot.—The reward of $10,000 offered by the Legislature of Massachusetts for the discovery of a cure for the potato rot, has been claimed by Mr. Joshua F. Hatch, of Dorchester. His remedy consists of ground charcoal mixed with sulphate of lime.

At present prices, we can well afford to dress potatoes with any amount of plaster and charcoal; but we doubt the efficacy of Mr. Hatch's remedy. The cause of the disease, Mr. Teschmaker thinks, is atmospheric, and he is probably on the right track. Try the coal dust and plaster, however; it costs little, and experiments are not only interesting, but frequently lead to great results.

ON THE CULTIVATION OF TOBACCO.

[*Continued.*]

OF THE CUTTING, CURING, AND HOUSING.

We have now arrived at the most difficult and critical stages of the whole process, every operation, from this time until the plant is cured, requiring great attention and care, as well as skill and nicety of judgment in the execution. And hence a great contrariety of practice in some of the minutiæ prevails, according to the superior skill and ability of different planters.

It is difficult to convey an idea of ripe tobacco by description. It can only be learned by observation and experience. In general, its maturity is indicated by the top leaves of the plant turning down and often touching the ground, becoming curdled with yellow spots interspersed on their surface, looking glossy and shining, with an entire loss of fur, a manifest increase of thickness in the substance of the leaves, which, when pinched in a fold between the finger and thumb, will crack or split with ease. But the most experienced planters acknowledge that they are more apt to err in cutting their tobacco too soon, than in deferring it too long. As a proof of this, take two plants growing side by side, of equal size and appearance in every respect, and both apparently ripe; cut one and weigh it both green and when cured; let the other stand a week longer, and when weighed like the first, the difference in favor of the latter will be astonishing. If it be asked, why we do not avail ourselves of the advantage to be derived from thus deferring the operation; it may be answered, as I have before observed, that tobacco while standing is liable to be injured and destroyed by more accidents than any other plant, such as hail-storms, heavy rains, high winds, the depredations of worms, the growth of suckers from the root, which abstract greatly from the weight and thickness of the leaves if suffered to grow, and which it is not always convenient to pull off. Besides this, the season of cutting tobacco is a very busy one to the planter, and too much work would accumulate on his hands by deferring it to the last moment. For these reasons it is considered most prudent to cull out the plants as soon as they will make good tobacco, in which case the loss in the aggregate amount of crop is balanced by avoiding the risk of accidents, and being able to bestow more care and attention to what remains.

The cutters go over the ground by rows, each taking two at a time, and the plants they cut are laid in the intermediate row between them. This facilitates the picking up, as the cutting of four rows is thereby placed in one. The stalk of the plant to be cut is first split down with the knife about six inches, and after being cut off just below the bottom leaf, is inverted and laid upon the ground, to fall and become pliant for handling. The splitting of the stalk is important, both for the convenience of hanging it on sticks, and accelerating the cure of the plant. To those unused to the culture and management of tobacco, it will be almost incredible to learn how soon it will *sun-burn*, as we call it, after being cut and turned over on the ground. This is effected by the hot rays of the sun piercing and penetrating the tender parts of the leaves, and is manifested by the parts affected turning white, and soon becoming dry and crisp, and, when cured, of a dark green color, without possessing any of the strength or qualities of tobacco. In very dry, hot weather, sun-burning often takes place before a large plant falls sufficiently to be handled without breaking off the leaves; and for this reason the cutting in such weather should always be made early in the morning, and not proceed after ten o'clock. Sometimes it is done in the evening, when there is no prospect of rain, by which the packing up may be accomplished earlier the next morning, and with less risk of burning. As soon as the plants fall sufficiently to handle without breaking off the leaves, they are *hand-fulled*, as we call it; that is, they are picked up, and three, or four, or five plants are laid together, with their tails from the sun, and the stalks inclined and somewhat elevated against the sides of some of the hills. The pickers up, after going through this ground, return and turn over each handful, that both sides of the plants may receive the benefit of the sun, and not be burnt: and this operation is again repeated, if by this time the tobacco is not pliant enough to be put in *shocks*. This is putting an indefinite number of handfuls together, the stalks in an erect position, forming a sort of circle of any diameter, from two to six feet or more, at convenient distances in the field; and these shocks should be im-

mediately and effectually covered with green bushes, or something else, previously in place, for the purpose of excluding the rays of the sun.

The next operation (after the heat of the sun has declined) is to remove the tobacco to the house or scaffold, and hanging the plants on sticks four and a half feet long, and about one inch square.* The common pine affords the best timber for this purpose, which will rive straight and with ease. From ten to twelve plants, according to size, may be hung on each stick, the width of two fingers to be left between each plant. The scaffolds are raised four or five feet from the ground, and the poles to receive the sticks are placed four feet apart, and are made to range east and west, so that the sticks will be north and south, to give both sides an equal benefit from the sun. The tobacco is commonly removed from the field to the house or scaffold upon the shoulders of the laborers, carefully put on and taken off to avoid bruising; but if the distance is great, carts are used, greater care being necessary to avoid bruising. This is considered so important, that some judicious planters make temporary scaffolds in the field, preferring the risk of injury from a smart rain to that of bruising, by moving it far in a green state.

There are two modes of curing tobacco: one in the house, altogether by fire; the other by the sun on scaffolds. The first is esteemed the best and most effectual, but it is attended with great risk. Our houses are generally four-sided pens, twenty feet square, built of round poles, and about twelve feet pitch. The joists are placed four feet apart, the rafters immediately over them having beams corresponding with the joists, three feet perpendicular from each other, so as to afford ranges or tiers for the tobacco up to the crown; and the same tiers are fixed below

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* SENDING "HOME" TO ENGLAND.

It was the custom formerly, as will be seen in Smith's History of Virginia, to "*send home*" *for cords to tie the tobacco on the sticks.* It was then left to the mother country to prescribe, not only the number of plants in relation to the number of hands on the plantation, but *she* regulated actually the *number of leaves* to be left on the stalk when it was *topped.* Topped "with the thumb nail," Totham says in his Treatise, "hardened in the candle for that purpose," and "not *for the use of gouging out people's eyes, as some have thought proper to insinuate.*"

It is true that, as far *as her interest is promoted by it*, we have cut loose from the *cords* of colonial vassalage. If she had continued to regulate the number of plants and of leaves, it is not likely we should now send her as much as enables her to levy on our tobacco alone some $16,000,000 a year! But how much less preposterous is it to send to her for iron and cloth, (the elements of which so much abound in Virginia,) than it was to send for cords to tie on our tobacco? Were it not for party spirit, that, like a Gorgon, petrifies men's minds, and turns their very thoughts into stone, Virginia would as soon think of sending to England for flour and beef in the *barrel*, as in the shape of the iron and other things in which she is importing them. Old prejudices, like the old oaks rooted in colonial times, may still linger for a while; but must finally disappear before a clearer perception of what real independence means. The truth *is* almighty, and it must prevail.

"*Occulari potest ad tempus veritas, vinci non potest.*"

We sometimes wonder that the heavier contributions she levies upon the United States, by the augmented sales of her manufactures—the consequence of our increased power of consumption, arising from our *quasi* independence and partial protection, precarious and uncertain as this is—we wonder, we say, that the greater benefit she derives by granting us that much independence, does not prevail with her to give Canada and other colonies a little more rope. The cat might give the mouse a little more play, and yet make sure of its victim.—*Ed. P., L., and A.*

the joists and at the same distance, by extending poles across the house between the logs of the pen. The house is covered tightly with pine boards; and if it is intended to cure by fire, the openings between the logs should be closed to prevent the escape of heat. Such a sized house will cure from two to three thousand weight, according to the quality of the tobacco. If it be decided to cure by fire, the tobacco is carried immediately from the field to the house, hung on sticks as before described, and these sticks crowded as close together on the tiers as they can possibly be, so as to exclude all air from the tobacco. It remains in this situation until the leaves of the plants become yellow, or of the color of hickory leaves just before they fall. This will generally happen in four or five days, when the sticks must be spread and placed at their proper distances apart in the house. About six or seven inches is the proper distance, or any other that will prevent the plants on different sticks touching each other. A moderate heat, which is gradually increased to a very strong one, is then applied, by making different ranges of fires throughout the house, and that wood is preferred and sought for, which will make the greatest heat with the least blaze and smoke. The fires must be continually kept up until the curing is effected, (say from four to six days,) when not only the leaves, but the whole stalk becomes dry, and changes from a green or yellow to a light brown color.

If it is not to be cured by fire, the tobacco is brought to the scaffold and hung, and the sticks are crowded in the same way on the scaffold, until the same yellow color is imparted to the leaves; and some planters are so particular as to cover their scaffolds with green bushes during this crowded state, to prevent sun-burning. When the proper time arrives, which is indicated by the yellow color of the leaves, the sticks are thinned and placed at such a distance as to admit the influence of the sun and air; and if the weather is warm and fair, in five or six days the curing will be so far effected as to justify the removal of the tobacco into the house, when it must be properly and finally arranged, and the cure will be gradually accomplished by time and season. But if damp, hot weather supervenes, it will be necessary, both in this and in the case of tobacco already cured by fire, to make moderate fires under each whenever it comes in very high order. In such weather and in such order, tobacco is liable to contract a mould about the stems, which can only be prevented by keeping it dry by fires. This mould injures both the quality and appearance greatly, and cannot be easily rubbed off. Great attention is therefore necessary to prevent it by these occasional firings, until regular cool weather sets in, after which there is no danger. From the vicissitudes of our climate for some years past, and other causes, it happens commonly that some portion of our tobacco is not mature, and is left until we are compelled to cut it by the approach of frost. Such plants, even if fully ripe, seldom cure of a good color or quality, for want of proper seasons. And here we may venture a general remark, which is, that tobacco cut early and fully ripe, will cure well and be of good quality under the most unfavorable circumstances, while that which comes late into the house is difficult to cure and of inferior grade. After the housing of tobacco is all accomplished, and cool weather begins, the house should be closed with green bushes, or fence rails set up on end close around on the outside of the house, to exclude damp air and beating rains, which generate mould, &c.

CONSISTENCY.

The poorest policy of a State is to plant her supremacy on the production of a particular staple or monopoly; for not only is any such attempt constantly liable to physical changes, but it also provokes opposition, and an energetic effort on the part of all other States to evade or crush the monopoly. That State will always be the richest, most powerful, and most civilized, whose people can boast of the greatest variety of natural products, and the greatest number and variety of industrial pursuits.

Our readers will scarcely credit us when we tell them that the above is from an ultra free-trade paper, one of the most determined supporters of the tariff of 1846, the passage of which was urged upon the ground that it was to the interest of the nation to continue as much as possible purely agricultural. The consistency of our free-trade friends is most remarkable.

IRRIGATION.

Translated principally from the "Journal d'Agriculture pratique."

BY F. G. SKINNER.

[*Continued.*]

Rain-water.—Of the rain-water that falls, the earth can absorb but a small portion. The remainder flows upon the surface to the brook or river towards which the slope of the land inclines. Rain-water, at the moment of its fall, is the purest of all others, but in flowing over the surface, it carries off great quantities of fertilizing substances. By conducting these waters (after they have washed a certain space) over the surface of grass lands, they are to a certain extent filtered, and the greater part of the fertilizing matter they contain is deposited upon the sod. The fertilizing qualities of rain-water vary with the soils over which they pass. Thus water flowing over a calcareous soil is considered much better than that derived from a clay soil, because in the latter case a tenacious mud is sometimes deposited, which injures the grass if the irrigation is immediately followed by a drouth. Water flowing over a sandy soil also produces good effects, provided the sand is mixed with clay. But it often happens that such water carries along with it quantities of sand, which can be of benefit only to marshy land. To the use of rain-water for the purposes of irrigation there are two serious objections: first, the irregularity of supply, and then the great quantiy of foreign matter usually carried along by it during heavy rains. In some cases these objections may be obviated without much expense; for instance, in favorable situations dams may be constructed and the water retained until the foreign matter is deposited and until the proper moment for application.

Now and then the accumulated mud may be taken from these reservoirs, and it will, after exposure for a time to atmospheric influences, make excellent manure. Water derived from melting snow is also to be considered as rain-water, but, on account of its low temperature, it has no effect upon vegetation. It can only become useful when, after a detention in the reservoir, it becomes warmer, or when it happens to be charged with slime which is deposited upon the meadow.

Spring waters have various properties, which are particularly manifested by their action upon vegetation. These properties are derived from the soil in which the water is amassed, or through which it flows before appearing at the surface. Water flowing through chalk or calcareous strata acts powerfully upon the growth of grass; issuing from a sandy soil or sandstone, its effects are similar, but not so marked. The tannin and other vegetable matters and acids, frequently contained in the waters issuing from forests, injure them for irrigation, and the same remark may be applied to water running from marshes. The temperature of spring water is various; in some cases, it is so low that the water will readily freeze, in others so high as to thaw ice and snow. For irrigation, water of a high temperature is always to be preferred, and very cold water should be detained in reservoirs until the temperature rises, before it is used.

The sweet grasses flourishing around a spring are indicative of the good quality of the water; the sour grasses, on the contrary, indicate the re-

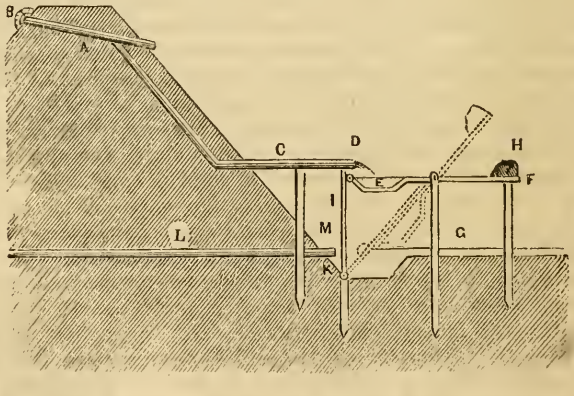
verse. Water-cresses and long green filaments are good signs; but if, instead of these, the bottom of the stream be covered with a brown flocculent substance, and the surface exhibit an oily appearance, its water is to be absolutely rejected.

The beneficial effects of water are greatly augmented by gathering it in a reservoir into which the wash from the house and stables is turned. Meadows in the immediate vicinity of and below the farm-yard thus acquire extraordinary fertility. To distant fields the urine may be conveyed in hogsheads, and mixed with the water in the reservoir; the water may also be enriched by throwing manure into it, but this would be bad economy unless there be a certainty that the whole of the water will be turned to account.*

In the Vosges mountains, in Eastern France, where irrigation is thoroughly understood, the system of reservoirs generally prevails, and one striking advantage attending it is, that the merest threads of water can be made available. In that country the liquids and offal from the dwelling and stables are collected together with the water from the spring into a reservoir, which is opened as often as it becomes full, and the land irrigated; but as the slope of these mountain meadows is often very great, the water has not time in its rapid flow to deposit all the fertilizing matter held in solution; hence, to avoid the loss of this, and to derive the utmost benefit from the element, it is caught in furrows, after irrigating a certain space, and conducted to a second reservoir, and there detained to water slopes lower down.

Thus, as is often the case, the same water is used several times by the same farmer, and sometimes by several, before it reaches the bottom of the valley. A similar method is practised in several of the Swiss cantons. Rain and spring water is gathered in reservoirs, and as these are often distant from the house, and it cannot always be known when they are full, a self-acting contrivance is used which lets off the water when it reaches a certain height, and closes the reservoir again when empty. (See drawing, fig. 1.)

Fig 1.



A is the dam forming the reservoir. B is the highest point to which the water can rise. When the water reaches the point B

* Guano in sacks of open texture, and placed in the irrigating canal, would probably go further in this than in any other way that could be devised.

it enters the pipe C, and at D pours into a wooden spoon E, the handle of which extends to and rests upon the point F. G is a strong post, with a slat at the top, through which the handle of the spoon passes, and in which it is fastened with an iron pin. H is a stone, to counterbalance the weight of the spoon. I is a narrow plank, movable at the hinge K. At M this plank is furnished with a leather bung, which stops the mouth of the conduit L, when the plank is kept in a perpendicular position by the pressure of the spoon E. The reservoir being full, the water passing by the pipe C falls into the spoon; this becoming heavier than the stone H, its counter-balance, falls, releases the plank I, and the water pours forth at M into the irrigating furrows. When the reservoir is empty, the spoon ascends, the plank I resumes the perpendicular, and the bung stops again the outlet at M. The dotted lines indicate the position of the spoon and the plank I, when the reservoir is full, and the water pouring out at M.

The progress lately made by the natural sciences now furnishes the means of creating artificial springs, supplying abundance of water to places hitherto deprived of it. These artificial springs, called *Artesian wells*, are made by boring to a greater or less depth. To obtain water by this process, there must exist beneath the surface a reservoir lacking a natural outlet; or there must be an underground stream with its source higher than the point at which the boring is effected; and, moreover, the pressure of the water must be such as to force it to the surface. These conditions are usually found united upon extensive plains, without springs at their surface, but which contain subterranean waters, descending from the surrounding mountains. Generally in this case the water is found between two impervious strata, and it gushes out at the surface when the upper stratum is perforated. It often occurs that these reservoirs are at a great depth, in which case boring becomes very expensive. A knowledge of geology and of the formation of the surrounding hills and mountains is an indispensable requisite to the acquirement of the art of boring for water, and it is therefore not advisable that the farmer should attempt it unless with the certainty of attaining his object at no very great depth, and at small cost.*

Besides a knowledge of geology, which may point out with some degree of certainty the existence of subterranean waters, there are other signs by which their presence may be detected; these are, plants flourishing only in moist places, and lastly, the emanations of vapor hanging over such spots. But generally springs discovered by these means are too feeble to be of much importance to irrigation.

Brook and River Water.—The composition of these waters is infinitely various; they lose by atmospheric influences the pernicious qualities sometimes possessed by spring water, and at certain seasons they carry with them an unctuous mud which renders them particularly valuable. There are streams, however, to which the same remarks made upon springs will apply. They are such as run through forests and marshes, and thus become charged with acid and astringent principles, unfavorable to the growth of grass. Still worse are the waters running from mines, forges, and tanneries. Streams which flow over calcareous soils, and which are charged with calcareous sediment, are of excellent application in winter

* In portions of the State of Alabama these wells abound, and the expense of boring is not great.

and autumn; but their use must cease from the moment the grass begins to shoot in the spring, especially in time of drought, for the sediment they then deposit is injurious. When trout, pickerel, or crayfish thrive in a stream, the inference is, its waters are well adapted to irrigation, no matter what appearances may be in other respects.

In relation to this subject, Professor Johnston writes thus, describing some water sent him for analysis:—

"The water rises from several natural springs, which, after being united into one body, are directed into the artificial channels provided for the irrigation. It is perfectly transparent, colorless, and tasteless. It is very soft, scarcely giving any curd with soap; and the application of chemical tests shows it to contain a very minute proportion of gypsum and common salt.

"When evaporated to dryness, it leaves a very small residue of solid matter. An imperial gallon leaves only 5.2 grains. It is therefore an exceedingly pure water. I have never, indeed, met with a natural spring water in which the proportion of solid matter was so very small.

"When the proportion of solid matter is so minute as this, it is difficult to obtain a sufficient quantity for a quantitive analysis. Our supply of the water amounted only to about a gallon, so that the results of the subsequent analysis of the 5.2 grains, made by my first assistant, Dr. Vœlcker, are of course open to correction. This analysis gave for the composition of the solid matter in an imperial gallon:

"Alkaline salts, (chiefly common salt,)	1.14 grains.
Sulphate of lime,	1.66
Carbonate of lime,	0.26
Carbonate of magnesia,	0.46
Organic matter,	0.76
Silica,	0.92
	5.20 grains.

"The result of this analysis is very interesting. It shows that what we are in the habit of considering the purest natural spring waters, containing the smallest proportions of mineral water, may be used with advantage for the purposes of irrigation. It is true that, thougth the proportion of mineral matter is small, it is all of a useful kind, such as is fitted to supply the necessary wants of the growing herbage. The silica, the gypsum, the lime, the magnesia, and the alkaline salts, are all the food of plants, and are required in the growth of grasses. The absence of iron in any appreciable quantity is probably a favorable circumstance, and allows the other ingredients of the water to produce their full effect upon the vegetation. That these ingredients do really favor vegetable growth is shown by the *numerous water-cresses* which grow naturally in the water. So far as my experience goes, indeed, I should say, that any water in which water-cresses spring up may be safely employed for irrigation.

"The result is also encouraging. So long as it was believed that waters which descended from limestone districts, or which from other sources are impregnated with much mineral matter, would alone prove useful to the irrigator, doubt and hesitation could not fail to exist in the mind of the practical man as to the pecuniary advantage he might derive from any outlay upon irrigation. There is scarcely a stream among our hills

and mountains in which the advantages of a skilful irrigation may not be confidently anticipated. Another point I may advert to as suggesting itself in connection with the composition of this water. If the benefit obtained from its use be so great as to increase the value of the grass nearly ten times, though the supplies of solid food it contains are so very small, how much greater should be the effect of those far more rich liquids that flow from our farm-yards, or which after showers of rain exude from our dung-heaps and escape into the nearest brook? Even enlightened farmers, who are aware of the value of the more concentrated liquids of their cattle-yards and stables, are yet skeptical as to the worth of such as, by their color, betray no marks of richness. The water of Glenythan is far less rich than any of these, and yet it caused land that rented for only one dollar and twenty cents an acre to yield *four tons of hay per acre*."

[TO BE CONTINUED.]

THE MUTUAL DEPENDENCE OF NATIONS.

For half a century, the press of England has harped upon the beauties of the mutual dependence of nations. To the planters it has said, "Send us all your cotton; put up no machinery for yourselves; you shall have cheap cloth, and we will take all your cotton." All at once, however, it is discovered that flax is likely to take the place of cotton, and at once the tune is changed, and the mutual independence of nations is found to be even more worthy of admiration than the mutual dependence before so warmly commended. In illustration of this, we place before our readers the following extract from a recent speech of Sir James Graham, one of the most distinguished members of the British Free Trade Cabinet:—

This question of the price of cotton did, he thought, open up some hope for the landed interest. And from whence did it come?

—— "Via prima salutis
Quod minimè reris, Graiâ pandetur ab urbe."

(Cheers.) As he had said, from whence they could least expect it—from Rochdale. (Hear, hear.) From the house of Bright, Brothers. (Loud cheers.) It had been discovered through their means that, by an invention in science, flax stalk might be used to great advantage, and in diminution of the cost, in mixture with cotton-wool, sheep's-wool, and even, as he had been informed, with silk wool. (Cheers.) The loss of the potato crop was, doubtless, a severe infliction, but he could consider no dispensation of Providence more remarkable than that it should have become the means, by the aid of science and skill, of overcoming the difficulty consequent upon the diminution of the supply, and the increase in price, of the raw material of our principal manufacture. *By this discovery we should be in a great degree made independent of the foreign supply of the great staple of our manufacture;* and if the cultivation of flax met with due encouragement, they would hear but little more, he was confident, of the distresses of the weavers of Carlisle.

The perfection of a system of trade would seem, in the eyes of Sir James, to be that of having us dependent on England for supplies of cloth and iron, and England independent of us for supplies of cotton. She would thus be enabled, even more than at present, to fix the price of all she buys and all she sells, the great object to be accomplished in compelling all the world to make their exchanges in her market.

From the Journal of the Roy. Ag. Soc. of England.

EXPERIMENTS WITH GUANO AND OTHER MANURES.

No. I.

BY E. S. BEARME.

REPORT of an Experiment to test the comparative efficiency of five different kinds of Artificial Manure in improving Pond Mud, the experiment being made on an acre of inferior pasture land in Stover Park, in the years 1847, 1848, and 1849.

The land on which the experiment was conducted is of uniform quality, the soil being a light, sandy loam, a few inches in depth, incumbent on a stratum of white clay.

The land underwent thorough draining in 1844, prior to which it would not produce a rent of more than 5*s.* an acre.

No manures were applied to the land in 1848 or 1849.

The object sought to be attained by extending the experiment over a period of three years was to test the *durability* of the different manures.

No.	Manures applied in 1847.	Weight of hay cut in 1847.	Weight of hay cut in 1848	Weight of hay cut in 1849.	Weight cut per acre in 1847.	Weight cut per acre in 1848	Weight cut per acre in 1849.	Cost of the Manures.		
		lbs.	lbs.	lbs.	Seams of 3 cwt.	Seams of 3 cwt.	Seams of 3 cwt.	£.	s.	d.
1	Six cubic yards of mud mix'd with six cwt. of salt	312	327	613	4⅘	4¾	9	0	14	0
2	Six cubic yards of mud mixed with 1½ hogshead of lime	353	337	538	5¼	5	8	0	13	6
3	Six cubic yards of mud mixed with three bushels of bone-dust	511	419	670	7⅗	6¼	10	0	14	3
4	Three cubic yards of mud mixed with three cubic yards of tan-yard refuse	524	354	558	7¾	5¼	8⅗	0	14	0
5	Six cubic yards of mud mixed with 90 lbs of Peruvian guano	930	550	725	13¾	8	10¾	0	14	0

N. B.—The after-grass in 1847 was stocked with sheep, but in 1848 it was lef unconsumed.

No. 2.

REPORT of an Experiment made with the under-mentioned Manures on an acre of pasture land in Stover Park, in the year 1849.

The manures, when mixed with a small quantity of fine earth, were applied broadcast on March 29th, and during the rainy weather which prevailed at the time.

The land is of a fair average quality, and was formerly used as tillage land, but has been in pasture for many years.

The crops were mown on 22d June, and the herbage produced by the different manures was of a superior quality.

No.	Manures applied.	Quantity of Manures applied.	Quantity applied per acre.	Weight of hay cut.	Weight cut per acre.	Cost of the Manures.			Cost of the Manures per acre.		
		cwt.	cwt.	lbs.	Seams of 3 cwt.	£.	s.	d.	£.	s.	d.
1	None	....	....	401	4¾		....			....	
2	Superphosphate of lime	2¼	9	616	7⅕	0	18	0	3	12	0
3	Nitrate of soda	1	4	706	8⅕	0	18	0	3	12	0
4	Peruvian guano	1½	6	1210	14⅛	0	18	0	3	12	0

ON THE PROPER QUANTITY OF SEED FOR WHEAT.

BY R. BIRCH WOLFE.

In 1848 I communicated the result of an experiment made by me on thin and thick sowing of wheat, which was published last year in the Journal of the Royal Agricultural Society; and from the statements I then made, it appeared that 7 pecks of seed, drilled at 7 inches apart, gave a produce of nearly a quarter of an acre more than 6 pecks drilled at 9 inches, the cultivation and land being equal.

As it was impossible to arrive at any satisfactory conclusion from a single experiment, I made a further trial last year, and, having now accurately ascertained the results, I give them, that if thought of any use they may appear in a future number of the Society's Journal. The land marked out for the experiment consisted of 3 acres lying together in a field of 16 acres, and divided into 4 plots of 3 roods each; the cultivation was exactly alike in each case, and the soil heavy clay in good heart; the seed Spalding wheat. I may add that the whole of my land is formed into *flat* stetches 7 feet 2 inches wide, which are exactly covered by the drill, harrows, and rollers, all made with double shafts, and the horses walk between the stetches.

EXPERIMENT.

Width of Drills in inches.	Seed at rate per Acre.	Produce in Sheaves.	Produce in Grain from the 3 Roods.	Produce at rate per Acre.	lbs. Weight per Bushel.
			Qrs. R. P	Qrs. R. P.	
9	5 pecks.	689	4 0 0	5 2 2	62½
6½	7 do.	665	4 0 0	5 2 2	62½
8	6 do.	681	4 0 3	5 3 2	63
Dibbled and dropped by hand at 8 inches.	6 do.	692	4 1 0	5 4 0	61½

It will be seen by the above statement that the produce from each parcel of land was very nearly the same—that which was dibbled failed most in plant, but tillered well, and yielded rather more than the rest, but in proportion as the plant was thin, so was the grain coarse and light.

From the frequent observations that I have made, and judging from both the above experiments, I have come to the conclusion that, taking the average of seasons and all other circumstances into account, there is great risk of loss in drilling wheat in such land as mine, at a distance of more than 8 inches, and with less seed than 6 pecks per acre. In heavy land, of average quality, well drained, and in good heart as mine is, the above quantity of seed (6 pecks) and intervals (8 inches) will, I think, be found the safest and most productive; at the same time it is very probable that less seed and greater intervals might answer as well or better in lighter land of superior quality, supposing the system of cultivation to be carried out upon the most approved principles.

I have this year acted upon the conclusion I have come to, and drilled all my wheat (about 80 acres) with 6 pecks of seed, and at 8 inches apart, and up to this time I am perfectly satisfied with the promise.—*Jour. of Roy. Ag. Soc. of England.*

We have been requested to insert the following paragraph:—"An important improvement in machinery for agricultural purposes has just been effected by the eminent engineering firm of Clayton, Shuttleworth, & Co., of the Stamp End Works, Lincoln. The improvement consists in combining in one implement facilities for threshing, shaking, and blowing, and in substituting, in lieu of the revolving cloth heretofore used to collect the wheat and pulse from under the straw-shaker, &c., a trough, having a vibratory motion, and which performs its office admirably. By this machine the wheat is delivered at one aperture, the long straw at another, and the chaff, short straw, and pulse at another. This important improvement, which is registered, is said to have the effect of saving the labor of four men—a circumstance, in these hard times, of no small moment to the farmer, who is compelled to resort to every expedient to render his occupation remunerative."

For the Plough, the Loom, and the Anvil.

SHADE THE GREATEST FERTILIZER.

WINCHESTER, February.

DEAR SIR:—The experience of the civilized world has clearly demonstrated the fact, that with manure only the soil under cultivation cannot be made to preserve its natural fertility. Liebig says, *Agricultural Chemistry*, page 51: "The first colonists of Virginia found a country the soil of which was similar to that above mentioned; harvests of wheat and tobacco were obtained for a century from one and the same field, without the aid of manure; but now whole districts are converted into unfruitful pasture-land, which, without manure, produces neither wheat nor tobacco. From every acre of this land there were removed in the space of one hundred years 12,000 lbs. of alkalis, in leaves, grain, and straw. It became unfruitful, therefore, because it was deprived of every particle of alkali, which had been reduced to a soluble state, and because that which was rendered soluble again in the space of one year was not sufficient to satisfy the demands of the plants. Almost all the cultivated land in Europe is in this condition."

And you well know, Sir, that this statement of the impoverished condition of the soil in this country is not solely applicable to Virginia; that all the cultivated lands are regularly progressing to the same result in every State in this Union;—not so obviously in the Northern as in the Southern States, only because the cheap and efficient labor always at the command of the Southern farmer enables him to crop his land more frequently and more extensively. It appears to me that the cause of this may be satisfactorily explained by consulting the experience of the individual farmer. He has been taught from time immemorial to the present day, that manure is indispensable to the preservation of the fertility of his land; or, in the words of a late writer, (Anderson's *Economy of Manures*,) "I beg it to be understood as my decided opinion that farm-yard manure must always be the farmer's main-stay." In obedience to this precept, he sets himself to work with energy and industry to collect and apply manure, and finds it utterly impossible to manure one tenth of his cultivated land. The result is inevitable; nine tenths being exhausted by the crop, and only one tenth improved by the manure, must terminate in its exhaustion. Or, what more strikingly illustrates this, if he cultivate a field of one hundred acres in corn every year, and only succeed in manuring ten acres, this field, in the course of forty or fifty years, will exhibit an appearance precisely similar to the exhausted lands in many districts of the Southern States. But every practical farmer knows, or ought to know, for the facts are constantly before his observation, that land can be made exceedingly fertile without manure. He must have noticed that if any portion of the soil have been covered, either accidentally or designedly, for some time, by water, stone, plank, logs, chips, brush, rails, corn-stalks, straw, buildings of every description without cellars, hay or straw ricks, leaves or clover, and in fact that under any and every substance which has covered its surface closely, it invariably becomes exceedingly fertile, and that the degree of this fertility is totally independent of the quality of the covering substance. Before we examine into the nature of this fertility, it will be necessary first to consider what manure is. Liebig says, page 56: "With us thick books

are written, but no experiments instituted. The quantity of manure consumed by this and that plant is expressed in hundredth parts, and yet we know not what manure is." It is very certain, Sir, that the analysis of manure does not demonstrate that it possesses a fertilizing principle, or the peculiar combination of principles which constitute it a fertilizing substance. And yet we are gravely advised to appoint chemical inspectors of manure!! The experience of the practical farmer has taught him that neither animal nor vegetable matters are of any value as manure, unless collected in quantities and mixed in his barn-yard or stables; that it there undergoes a peculiar fermentation termed putrefaction, the product of which proves exceedingly valuable in fertilizing the soil. It is very manifest that the value of this product essentially depends upon the perfection of the putrefactive process; for the interruption of this process, from any cause whatever, never fails to lessen its value, and the prevention renders it worthless. It is uniformly most valuable when made in pits or vaults, and better in stables than in the barn-yard. No wonder the farmer, in every age, has attached so much importance to the collection and preparation of manure; for it is the only substance which he has ever known which would enable him to raise a crop of any kind in an exhausted soil, and which has proved equally efficacious upon all soils suitable for cultivation, no matter what the deficiency in its mineral constituents. Scientific men have attached much importance to the ammonia wh ch uniformly escapes during the putrefactive fermentation, and much of the value of the manure has been attributed to it; why, I am unable to understand. For it appears to me that it would be quite as philosophical to attribute the flavor of Madeira wine to the carbonic acid gas which escapes during the vinous fermentation, as to imagine the value of manure to depend upon the escape of ammonia which characterizes the putrefactive process. If ammonia be so powerful a fertilizer that the minute quantity of it which the chemists have been able to detect in the atmosphere when fixed by the action of gypsum exerts so wonderful an influence upon the growth of clover, why is it that the sulphate of ammonia does not prove a cheap and efficient substitute for barn-yard manure? The well-known fertility of some forest lands when first subjected to cultivation has been ascribed to the decomposition of vegetable matters. "Some virgin soils, such as those of America, contain vegetable matter in large proportion; and as these have been found eminently adapted to the cultivation of most plants, the organic matter contained in them has naturally been recognized as the cause of their fertility. To this matter the term vegetable mould or humus has been applied; indeed, this peculiar substance appears to play such an important part in the phenomena of vegetation that vegetable physiologists have been induced to ascribe the fertility of every soil to its presence. It is believed by many to be the principal nutriment of plants, and is supposed to be extracted by them from the soil in which they grow. It is itself the product of the decay of vegetable matter, and must therefore contain many of the constituents which are found in plants during life." (See Liebig, p. 11.) The erroneous definition of such an important principle as this must have led to serious errors in practical agriculture. The decay of no vegetable substance upon the surface of the earth ever forms manure. Von Thaer remarks, (*Principles of Agriculture*, p. 202:) "In the open air, and without the intervention of moisture or of any additional heat, the process of fermentation and putrefaction is not perceptible; a species of decomposition does however take place

which is similar to slow combustion. This decomposition produces a very different matter to that which is the result of putrefaction, and one which is smaller in quantity, because the greater part of the carbon combines with oxygen and evaporates under the form of carbonic acid." We do not find any appreciable deposit in those hollows in which the leaves have been accumulating and decomposing for centuries, which certainly would not be the case if they had been converted into manure. That the trees require a great deal of nutriment is manifest, for, if a few be left in a cultivated field, they exhaust the soil for some distance around them; and that they consume the same food as cultivated plants is proved by the fact that they can be made to thrive in an exhausted soil with manure, and with manure only. Whence, then, do the trees derive so much manure as not only to render their growth luxuriant but to leave the soil fertile beneath them? I answer, from the shade, and shade only. The mould or rich earth termed humus, which is found in the forests under the leaves or loose stone, is the residue of the putrefaction of the earth itself, caused by shade, and may be found in all locations favorable to the generation of the putrefactive process. Liebig says, page 44, "The subterranean vaults in the old castles near the Rhine, the 'Bergstrass,' and Wetherau, are constructed of sandstone, granite, or basalt, and present appearances similar to the limestone caverns. The roofs of the vaults or cellars are covered externally to the thickness of several feet with vegetable mould, which has been formed by the decay of plants." Could vegetation have ever existed in such a location as this? I am told that it is found in quantities in the Mammoth Cave, Ky., and may be found also in vaults and caves, and under old buildings of every kind. In fact, under any and every substance which shades the surface of the earth densely, it may be found in quantities dependent solely upon the density and duration of the shade. The poorest soil, no matter what the deficiency in its mineral constituents, will be changed in color, consistence, and fertilizing qualities, when closely covered. The natural or innate fertility is possessed by all earth, from whatever depth it may be obtained; but this substance, humus, is found only where the earth has been favorably located for putrefaction. It is certainly manure, for it feeds all plants in every variety of soil. The practical importance of a knowledge of this is manifest, for the farmer will no longer attempt to preserve the natural fertility of his land by manure, which no energy or industry has ever yet enabled him to accomplish. He will keep no stock with a view to convert his vegetable matter into manure; for, by spreading the raw material upon his land, he can cover a much greater extent of surface, as well as impart a more permanent fertility to the soil. He will value his clover for its shade only, for he will find that a luxuriant growth of clover untouched for one year will impart a more permanent fertility than the best manure. We know that this effect is not the result of any peculiar quality in the clover crop, for the pea-vine in the South, and a bitter weed, the white lupine, in Italy, produce the same degree of fertility. Von Thaer says, page 229: "We bestow a most active and abundant vegetable amendment on a soil when we sow it with plants adapted to its nature, which will flourish and attain the highest state of development; and then, when they have begun to flower, either bury them by the action of the plough, or have them eaten off the ground, or trodden in by cattle. This practice is of great antiquity; it was held in high estimation by the Romans, and exists at the present day in Italy. There it is that the amelioration produced by a

crop which has been buried while green is the very best that can be bestowed on a soil, and is capable of bestowing on it the utmost degree of fertility of which it is susceptible; indeed, they even prefer it when there is a sufficiency of animal manure." I quote this paragraph to show that the fertility imparted to the earth by the growth of vegetable matters has long been known and appreciated by practical farmers. It is true that their value has hitherto been attributed to their decomposition when ploughed under, but this opinion is certainly erroneous. Vegetable substances, unless tainted with putrefaction, saturated with water, or mixed with lime or ashes, I confidently assert, never form manure when ploughed under, the apparent fertility being attributable solely to the previous shade, for reasons which I shall now assign.

1st. The residue of no other decomposition, to which vegetable substances are subject, than the putrefactive, ever proves to be manure.

2d. Vegetable matters ploughed under are deprived of a contact of air, which is known to be indispensable to the generation of the putrefactive process.

3d. It is well known that vegetable substances impart much fertility to the surface of the soil previous to their decomposition. This fertility is neither increased by ploughing them under, nor diminished by their previous removal.

4th. Other substances, such as plank or stone, which are not decomposed, impart an equal fertility. A very respectable farmer, near Winchester, found it necessary to rebuild his mill. The roof being sound, he had it removed and placed on a knoll in the adjoining field, intending to use it for sheds. Circumstances prevented this until the fall after, (about 15 months,) when he seeded the field in wheat. He was astonished to find that the land which had been covered by the roof produced much better wheat than other portions of the field which had been well manured. Another farmer, in preparing his field for a crop four years ago, picked up the loose stone and placed them in large piles in the field. Last year he cultivated the field in corn, having previously removed the stone. He says that he made three times as much corn from those spots which had been covered by the stone piles as from any other portion of the field.

How can these facts be satisfactorily explained?

Yours, respectfully, ROBT. BALDWIN.

MIXING PEAT CHARCOAL WITH STORED POTATOES.—A subscriber writes: "From the properties of the peat charcoal it occurs to me, that it might act as a preventive to decay if it was mixed with potatoes when pitted for the winter. Will you have the kindness to give your opinion, and suggest the mode of doing it and the quantity necessary to be used?" From the well-known antiseptic properties of charcoal, more particularly peat charcoal, the suggestion (which is not new) of mixing the latter with stored potatoes, to prevent or arrest disease or decay, is feasible. The mode of doing so is to scatter the peat charcoal amongst the potatoes as they are being stored or pitted. You may use any quantity, the more the better, particularly if the potatoes be damp or wet at the time.—*Farmer's Gazette.*

REAPING MACHINES.—The *Prairie Farmer* says that the immense amount of machinery introduced into the harvest-field at the West, will entirely obviate all inconvenience from any apprehended scarcity of help; and that probably not less than 3,500 new reaping machines will be put in use in the North-west the present season—equal to the labor of 17,500 men.—*American Cultivator.*

THE following, which we take from the *Rochester Democrat*, is recommended to the particular attention of our readers:—

IS CONSISTENCY A JEWEL?

The *New-York Dry-Goods Reporter* commends this question to the Free-Trade League for its immediate discussion. It is moved to propound the question by the application to Congress for aid to the Collins' line of steamers, on which the *Reporter* discourses in this wise:—

"Mr. Collins is the chief prop of the Free-Trade League in this city, and is utterly opposed to the principle of protection to American skill and industry.

"He esteems it unjust and unwise to protect American iron, American coal, or American manufactures by any amount of duty whatever. In this day of relaxation from the experience and legislation of former years—this day of universal brotherhood—it is ungenerous to protect American at the expense of British interests! England can supply us with cloths, with muslins, with cotton prints, with books, with hats and boots—in short, with every thing we require, cheaper than we can manufacture them for ourselves; and it is a fraud upon the consumer (no matter if he is unable to earn enough to buy a decent coat)—it is a fraud upon humanity to levy duties upon these indispensable articles. The Americans are an agricultural people—essentially so, if we may believe the English—and it is wrong to divert them from their natural employment; it is wrong to remind them of their rivers, their lakes, their coal-beds, and their water-falls. Not only so think the English, but the whole league of free-traders who support the English theory.

"Nevertheless, and notwithstanding these arguments, Mr. Collins, when he found himself in a tight place, did not hesitate to perceive his own case was an exception to the general rule. *His free-trade friends seemed to think so too, and aided him all they could.* His line of steamers already enjoyed a monopoly, and a large annual subscription, but it wanted more aid, more money, more discrimination in its favor. *Protection* against English competition was earnestly implored by the great Protagonist of the free-traders!

"Now for our part we see no difference between protecting Mr. Collins' line and Mr. Snooks' factory. Indeed, the latter employs more laborers, expends more money, and improves the condition of the farmers about it more than Mr. Collins' steamers possibly can, the expenditures for which are partially and necessarily made in a foreign port.

"If it is right and just to protect Mr. Collins' private interests, because their success flatters our national pride, we do not see why we should stop short with his particular case. We do not see why we cannot consistently feel a pride in manufacturing the finest woollens and cottons in the world, and in entirely surpassing the English fabrics in cheapness and excellence.

"We cannot perceive why the piston should have such decided protection from the government, and the loom and the anvil have none."

There is a certain Mr. Brown, a member of the British Parliament, and the author of a free-trade letter to Secretary Meredith a little more than a year ago, who could doubtless make the distinction intelligible to the *Reporter*, which exists between protection to the piston when it is employed in driving a steam-ship, and protection to the same piston when it is driving a steam mill. Protection in the first case is in accordance with what Mr. Brown and his school consider well-settled principles of economy; protection in the last case is, in their mature judgment, "an exploded fallacy." Mr. Brown signified as much to Mr. Secretary Meredith, who, but for the information, might have thought, as the *Reporter* does, that the system which admits the one might, without stretching, admit the other also. Mr. Brown and his school—the calico school of economists—have always advocated protection for the machinery of transportation, ships and the like, and *no* protection for ploughs, and looms, and anvils, the machinery which produces. To fetch and carry, according to their notions, is the great business to which mankind should be encouraged to devote their energies. But the idea of encouraging them to *create* values, instead of toting about those already created, is obsolete.

This Mr. Brown, we understand, is largely interested—to the tune of hundreds of thousands of dollars—in the Collins line. It is just possible that this circumstance may explain how it comes that Mr. Brown exhorts Congress not to listen to Mr. Meredith's recommendation, to speed the pistons in the mills, by securing the domestic market for their products, at the expense of English producers, and yet is anxious that it should speed the pistons in the steamships at the expense of the American treasury.

CHECK TO THE PURELY AGRICULTURAL INTERESTS.

Whenever it is proposed to sacrifice the agricultural interest by destroying the existing market on the land for the products of the land, the English and American free-traders assure the farmers and planters that it is all for their own good, and that it is far better to depend upon a distant market than a near one. They are then assured that the commercial and agricultural interests are the best of friends, and that the triumph of one is necessarily the triumph of the other. Occasionally, however, the truth comes out; and we now furnish a specimen of the real thoughts of an English free-trader, by which it will be seen that, in the existing commercial policy, "the purely agricultural interests have received a check" from which they are little likely to recover, and that the balance of power and influence is hereafter to be in the hands of *the middlemen*, who produce nothing, and grow rich by standing between the producer and the consumer:—

Of the States destined to stretch along the Pacific, the development and destiny will be, like those of the Atlantic board, commercial. They will cover the Pacific with their fleets long before their ploughs reach the foo of the Rocky Mountains. *They will be a race of traders, not of delvers;* slavery they will none of. Such labor as is required is the labor that freemen can and will accomplish for themselves, and in which they will not permit the slave to participate; *and thus the purely agricultural and anti productive interests have received a check,* and the limit which restores the balance of power and influence may already be discerned. The new census throws a startling light upon some of these facts.—*London Examiner.*

The complimentary manner in which the planters and farmers of this country are noticed can scarcely fail to strike them agreeably. How long will they be content to continue a policy which tends daily to take the control of affairs from their own hands, and place it in those of "the race of traders," of all races the most purely selfish?

WHO IS IT THAT DESIRES CHEAP FOOD?

Our corn market is very dull, being overwhelmed by the enormous receipts of flour from France; the receipts into this port alone from that country during the past week being equal to about 40,000 bbls. of 196 lbs.; and the quantity forced on the market so far exceeds the demand, that prices are quite nominal.—*London Circular, April* 19, 1851.

Some time since, the *Union* undertook to persuade its readers that the object of the system which looked to making a market on the land for its products was that of enabling the manufacturers to obtain food at low prices, and to have labor cheap. "The manufacturers want cheap food," said its editor; and to prevent them from having cheap food, the proper course is to close all the furnaces and mills, and become as much as possible dependent upon the "great grain market of the world." Their object has been accomplished, and our farmers have now to fight with all Europe for the little hold they yet have upon it; and what prospect they have of retaining any portion, may be judged from the fact that France alone, as is shown in the above extract, is supplying England with flour, low as is the price, at the rate of two millions of barrels a year.

It is clear that the market of England is not to be relied upon, and

that the farmers are to have nothing in exchange for the great and rapidly growing home market they were persuaded to sacrifice. The "race of traders" is not, however, yet satisfied. It is now required that the farmers shall relinquish their protection, and the workmen of the North and East are appealed to by the free-traders to unite with them in the effort to rid themselves of the "undue protection" afforded to the great grain-growing States. We beg our readers to read the following passage from a letter of one of these free-traders, and then determine for themselves who it is that wants cheap food:—

Canadian Reciprocity.—There is more involved in this question of reciprocity with Canada, with reference to the American people, than they seem to be aware of; and it is on their account chiefly, as a resident of New-York, that I have been an advocate of the measure. It is one of cheap bread to the inhabitants of the manufacturing districts and on the seaboard of the United States, where the necessaries of life are dearer than they are even in England—the duty of twenty per cent. on agricultural produce raising the price to the consumer proportionably, while it can be exported to England duty free; the only effect of which is to impoverish the working classes elsewhere, *that an undue protection may be afforded to the agricultural interest in the great grain-producing States of Wisconsin, Ohio Michigan and Illinois;* the operation of the laws at present in force in the United States being to enable them to ship flour and wheat at an American port on the upper lakes, and to carry it to Oswego or Ogdensburg free of duty; when, if it is sold and landed in Canada, or if these articles are the produce of the Province, they are subject to an enormous duty, which, as I before stated, raises the price to the consumer, and is severely felt by the bulk of the community, particularly in New-York.

GOOD NEWS FOR HORSES.

T. M. Coleman has filed a caveat for an improvement in India rubber horse-collars and saddles, which are inflated with air, instead of being stuffed, as is now the case. If the air can be retained at the very point of pressure, this will prevent chafing, and be a great relief to the noblest of domestic animals—the horse. We shall then expect to see this invention in general use, as humanity demands that even to the creature "the back should be suited to the burden."—*Harrisburg (Pa.) Journal.*

The above can scarcely fail to be interesting to our Southern and Western readers, who use to so great an extent the expensive horse, when the more economical Yankee uses the comparatively inexpensive ox. In laying it before them, we beg to call their attention to the fact, that almost every improvement in machinery required for the use of either farmer or planter comes from those parts of the country in which the plough, the loom, and the anvil are enabled to combine their exertions, and in which those who follow the plough, drive the shuttle, and strike the hammer are enabled to associate for their mutual improvement. Such being the case, is it necessary to seek elsewhere for reasons why the people of one part of the Union grow rich, while the other remain poor? Assuredly not! When men are enabled to combine their exertions, and thereby to make a market on the land for the products of the land, the farmer is enabled to use improved machinery of production and of transportation, whereby he produces more and sends it to market at less cost of freight; and, above all, he is enabled to return to the land the refuse of its products, the manure, and he and his land grow rich together. When, on the contrary, they cannot combine their exertions, and are therefore compelled to make their exchanges in distant markets, the machinery of

production is always bad, and transportation is costly; the amount produced is small, and much of it is spent on the road to market; and the manure is wasted on the road or in the distant market, and the farmer and his land grow poor together.

A NEW JOURNAL.

"The Soil of the South," is the title of a new and very promising Monthly Agricultural periodical, published at Columbus, Georgia, under the auspices of the "*Muscogee and Russell Agricultural Society.*" If success depends on the talents and fine spirit of the editor, the best may be predicted. Who the editor may be does not appear, and therefore we may say with the less hesitation, that he seems to have a clear head and a good heart. The *junior* editor very naturally says, "*Our* hope is *in woman.*" Of course he does not believe (who does?) that "*Frailty, thy name* is woman." We shall be happy to exchange, not only our journals, but all sorts of good offices with senior and junior, although they would seem to think that "nothing good can come out of Nazareth," or from north of Mason and Dixon's line. For ourselves, our birth, our associations and labors were all south of it, until *Polked* north in search of bread. Before the editors of "The Soil of the South" were born, probably, the South Carolina Agricultural Society, at the instance of no other than General Thomas Pinckney, voted us a *gold medal* for our services to the Agriculture of the South. Far from being sensible of any abatement of admiration of the South, and devotion to her interests, we believe we never understood them so well, nor labored for them so efficiently as now. Reason, truth, and patriotism, however, know no geographical lines. For ourselves, we confess that we are as proud to have a Dawson from Georgia as a Grinnell from Massachusetts; a Vinton from Ohio as a Hilliard of Alabama; a Gentry from Tennessee as a Reed from Pennsylvania; a Schermerhorn from New-York as a Pearce from Maryland and a Stanley from North Carolina, all uniting, as they do, in cordially recommending the *Plough, the Loom, and the Anvil* to all who desire to see American industry fairly protected in the development of its own resources.

Our great wish is to see the labor of the country elevated and protected, and our own resources developed, as essential to the permanent prosperity of the Planter and the Farmer. We want to see permanently established a financial system, under which Planters will be seen coming together in conventions, not to devise how they shall *diminish* their crops, but how they shall increase them, to meet an ever-increasing demand at home. In this feeling, and in our efforts to carry it out, we never have, and never shall know "any South or any North, any East or any West," let our personal locality be for the time where it may. We sincerely wish success to all Agricultural Periodicals, conducted, as we are sure "The Soil of the South" will be, in a high-toned, liberal, gentleman-like spirit. Such journals have done more to diffuse both zeal and knowledge, than all the Agricultural Societies and exhibitions that have been held, or will be, from the beginning of time to the day of judgment.

WHY STEAM IS NOT LIKELY TO BE APPLIED TO THE PLOUGH.

The following article, which appeared in a recent number of a foreign journal, is by the author of a very eloquent and learned little work, entitled the History of Agriculture.

In pronouncing the inapplicability of Steam to the operation of *Ploughing* the ground, he agrees with the views expressed in the report of 1849–'50 by the present Commissioner of Patents, whose practical skill is only to be equalled by the exquisite urbanity displayed in all of his official transactions.

Having received a copy of the pamphlet, lately published by Lord Willoughby D'Eresby, giving plans and description of his Steam Plough, I feel the more called upon to offer a few observations on it, as I saw, when abroad lately, a long quotation of some remarks of mine* on Steam-*cultivation* appended to an engraving of Lord Willoughby's machine in the "*Illustration Universel,*' (the Paris "Illustrated News,") by M. St. Germain Le-Duc.

But no two views of the subject, I fear, can be wider apart than those of his Lordship and my own. I hold it (under favor) to be an idea *fundamentally erroneous* to attempt to combine steam-machinery with the Plough. I have already given my reasons for this at some length in a little work published last year on the history of Agriculture, from which the extract in the French journal above alluded to was taken. And I hope I am not presumptuous in repeating my conviction that until the idea of the Plough, and, in a word, of all *draught*-cultivation is utterly abandoned, no effective progress will be made in the application of Steam to the tilling of the earth. I repeat what I have said before, that "ploughing" is a mere *contrivance for applying animal-power to tillage.* Get out of animal-power, and you leave "ploughing" behind *altogether.* Get into steam-power, and you have no more to do with the Plough than a horse has to do with a spade. It is *no essential whatever* of cultivation that it should be done by *the traction of the implement.* Spade-work is perpendicular; Horse-work is horizontal; Machine-work is *circular.*

Whoever would now dream of retaining the form of the hand-flail in the threshing-machine, or that of the oar in a steamship, or of putting the piston rod to work at the lever-end of a pump-handle? Yet doubtless these bastard attempts were all made in their day, till the several inventors had come to see in turn that

> "'Tis gude to be *off with the old love*
> Before ye be on wi' the new!"

I am aware that I am repeating myself, unavoidably, in all this; but no one can imagine, without trying it, the difficulty of making the mechanical part of the question intelligible to the agriculturist, and the agricultural part to the machinist. The Steam-engine has no taste whatever for straight draught. He is a *revolutionist,* in the most exact sense of the word. He *works* by revolution; and by revolution only will he cut up the soil into a seed-bed, of the pattern required, be it coarse or fine. And *that,* it is my firm belief, he will be seen doing at a handsome average, before a very large portion of another century shall have passed over our heads. Why should it not be? Why should not a strip or lair of earth be cut up into fine soil *at one operation,* (and sown and covered in too,) as easily as a circular saw cuts a plank into saw-dust? As to employing a steam-engine to turn a drum, to wind up a rope, to drag a plough, to turn up a furrow, and all this as a mere prelude for an after-amusement to all the ancient tribe of harrows, scufflers, rollers, and clod-crushers, to do supplementally the real work of cultivation, it reminds one of "the house that Jack built." One can hardly blame the iron ribs of any respectable boiler for bursting at the first pull at a task so utterly at variance with every known law of mechanical advancement, so offensive to the economics, I had almost said the very ethics of the steam-engine.

I trust I may be forgiven for so boldly speaking; but I am sorry to think of one useful shilling being thrown away in the attempt, unprofitable even if successful, of harnessing steam with horse harness, to do horse's work in a horse's way; the im-

* See page 75, in No. 5 of the *Agricultural Gazette,* 1850.

plement itself, whose wretched work it is put to accomplish, being a tool with sentence of death written upon it, (be it ancient as it may,) for its tyranny to the subsoil, which bears the whole burthen and injury of its laborious blundering path.

I say the Plough has sentence of death written upon it, *because it is essentially imperfect.* What it does is little towards the work of cultivation; but that little is tainted by a radical imperfection—damage to the subsoil, which is bruised and hardened by the share, in an exact ratio with the weight of soil lifted, *plus* that of the force required to effect the cleavage, and the weight of the instrument itself. Were there no other reason for saying it than this, this alone would entitle the philosophic machinist to say and see that the Plough was never meant to be immortal. The mere invention of *the subsoiler* is a standing commentary on the mischief done by the Plough.

Why then should we struggle for its survival under the new dynasty of Steam? The true object is not to perpetuate, but as soon as possible to get rid of it. Why poke an instrument seven or eight inches under the clod, to tear it up in a lump by main force, for *other instruments to act upon*, toiling and sweating and treading it down again, in ponderous attempts at cultivation wholesale—when by simple *abrasion of the surface* by a revolving-toothed instrument, with a span as broad as the hay-tedding machine, or Crosskill's clod crusher, you can perform the *complete* work of *comminution* in the most light, compendious, and perfect detail?

Imagine such an instrument (*not rolling* on the ground, but) performing *independent* revolutions *behind* its locomotive, cutting its way down by surface abrasion, into a semicircular trench about a foot and a half wide, throwing back the pulverized soil (just as it flies back from the feet of a dog scratching at a rabbit-hole); then imagine the locomotive moving forward on the hard ground with a slow and equable mechanical motion, the revolver behind, with its cutting points (case-hardened) playing upon the *edge*, or *land side* of the trench as it advances, and capable of any adjustment to coarse or fine cutting, moving always *forward*, and leaving behind, perfectly granulated and precisely *inverted*, by its revolving action, a seed-bed seven or eight inches deep, *never to be gone over again* by any after-implement except the drill, which had much better follow at once, attached behind with a light brush-harrow to cover the seed.

It is hard, by mere language and without a diagram, to describe intelligibly to the mind's eye an instrument that has not been seen, however it may have become familiar enough to my own eye. My notion may be wrong, but I am strongly induced to feel that such an instrument alone will ever fulfil *the requisitions of the Steam-engine*, which shortens and *remodels* every labor it undertakes, and never condescends to old appliances, except where they are themselves intrinsically perfect in their mode of action.

Why did Steam reject *the Pump-handle* and *the Oar?* Because in both the leverage is obtained by loss of labor and time, occurring during the back-movement of the handle, a movement necessary to the manual, but not to the mechanical agent. For the same reason, whenever it is applied to till the earth, it will antiquate every instrument that *cultivates by traction*, because traction is not only not necessary to cultivation, but is inherently mischievous on other grounds, apart from the clumsiness, inaccuracy, and incompleteness of the work it turns out.

But THE STONES! There is much fear expressed for the teeth of the circular-cutting implement I have described, when they come in contact with stones. The objection would have been equally valid, at first sight, against the use of the Plough or the Scuffler. Let me see the instrument in use where there *are no stones*, (and there are plenty of broad acres in England of this class,) and it will not be long before it gets upon the others. If it cost five pounds an acre to clear them out, it must be done, and would in such case well pay to do it. But the truth is that the instrument itself suggests the kind of machine which, with a little adaptation, (greater power and slower motion,) might perform this preliminary service at the least expense. If land is to be like a garden in one respect, I see no good reason why it should not in all. I do not think stones will stand long in the way of Steam, or be readily preferred to bread, if, *where there happen to be none*, a steam-driven cultivator can be brought to bear, which, after the simple and beautiful example of *the mole*, shall play out the long comedy of our present field cultivation in *a single act*, present a finely-granulated seed-bed by a single process, almost at the hour required, and trammel up the "long summer fallow" into the labor of a day, with an accuracy as perfect as the turning of a lathe, and an aëration (and consequent oxygenation) of the soil as diffusive and minute as that of a scattered mole-heap, or the dust flying from a steam-saw bench.

Implement-makers and mechanicians would not be long in understanding all this if they were not under the supposition, received at second-hand by them, and therefore the more difficult to eradicate, that ploughing is a necessary form of cultivation to be kept in view. Once let the Q.E.F. be clearly understood by them, once let them be made fully to perceive that "ploughing" is merely the first of a long series of *means* towards the accomplishment of a particular end, that end being the production of *a seed-bed*, of suitable depth and texture, and with the soil as nearly as possible inverted in its bed, and I do not think they will be long in setting the steam engine about its proper task, in the proper way. But their attention is distracted at present from the end to the means. They are taught to think that the plough is a *sine quâ non*—that steam-cultivation of necessity implies steam-*ploughing*, and they are led to give up the task in despair, because they are at fault upon a false scent.

We have many *rolling* implements employed in the field, but we have only one instance of a *revolving* implement. The clod-crusher and the Norwegian harrow *roll;* the hay-tedding machine (one of the best instruments ever invented) *revolves*. I use the words somewhat arbitrarily, but the difference I allude to is very important. The first are liable to the evil of "clogging," because they derive their axis motion *from the soil* as they pass over and *press upon* it. This action must not be confounded with that of a machine which *has its cause of revolution within itself*, independent, and acting *upon* the soil as a circular-saw acts upon a board, or the paddle-wheel of a steamer upon the water. The teeth of a saw clear themselves, by the centrifugal motion they communicate to the particles they have detached from the substance they act upon. A circular "cultivator," steam-driven, will do the same, for I have proved it. It does so more effectually according to the speed (of revolution) and the state of moisture of the soil. This last incident is as it should be; for it is not desirable that a clay soil should be dealt with when in an improper state for cultivation; and one great advantage of such an instrument as I point to, would be that it would so immensely enlarge the choice of a suitable period, by its compendious accomplishment of the whole work of culture.

My object, however, at present, is not so much to advocate the particular mode of applying Steam-power which I myself suggest, as to explain again, and more fully, the grounds on which I feel more and more strongly assured that the attempt to employ it through the medium of the plough must be eventually renounced. I have left a great deal unsaid, to avoid prolixity; but propose, at another opportunity, to enter more closely into the subject. Mr. Way's admirable Lectures on "The Effects of Manures relatively with the degree of Disintegration of the Soil," read me a forcible chapter on the *Agricultural* bearing of the mode and means of cultivation I have hinted at, and on which a good deal had passed in my mind, from the peculiar notice bestowed on that passage of my work above alluded to, but which only went so far as to assert the superiority of the spade as a cultivator over the plough—a superiority which I am now far from thinking unsurpassable.

C. Wren Hoskyns.

Comparative Value of British and American Iron.—Most of our readers are, we doubt not, aware of the vast amount of the transportation on the Philadelphia and Reading Railroad, but few of them, probably, have reflected on the opportunity afforded by its vast business for testing the comparative durability of the different descriptions of iron—an opportunity probably unequalled in the world. For many years a record has been kept in relation to every single bar removed, showing the length of time it had been used, and its condition when removed, so that it can be at a moment ascertained how many tons' weight had passed upon it before it became so far worn as to render its removal necessary; and the result of the whole has been to establish the fact that true economy requires that American iron should alone be used for all future repairs, even at a much greater difference of price than now exists. That such is the case will be seen from the following facts:—

An English rail, weighing *sixty pounds* to the yard, requires ninety-four tons to the mile; the cost of which, at $40, would be $3,760. An American one, of *fifty pounds* to the yard, would require 78 tons; which, at $48, would be $3,744. Experience has proved the latter to be more durable, and in every respect better than the former, and, therefore, to be *much cheaper*, even at a difference of $8 per ton, or more than the whole of the present duty on foreign iron, whereas the actual difference is, as we learn, little more than $5 per ton. Nevertheless, English iron, cheap and comparatively worthless, is imported by hundreds of thousands of tons, and will, we doubt not, continue to be so until the remainder of our furnaces shall be closed, when prices will again rise, and probably to the old level.—*Republic.*

ENTOMOLOGY.

NO. I.

BY S. S. HALDEMAN.

FIG. 1.

ENTOMOLOGY, or the study of insects, is interesting on account of the vast number of species and individuals, and the great variations exhibited in their structure and habits. Some are predacious, living upon other insects; some feeding upon decaying animal matter, and others upon decaying vegetables, these acting as scavengers to remove offensive matter. But the greater part live at the expense of vegetables, various species attacking every part, from the root to the seed.

It is chiefly with the last that the farmer, gardener, and forester are concerned, and in Europe the subject has been deemed of sufficient importance to call for national aid in making investigations and publishing histories of insects in their relations to man.

It is sometimes difficult to tell what insects are hurtful and what beneficial, and in some cases a species which was the destroyer of the real enemy has been mistaken for the cause of the mischief. Even when a destructive larva is seen, the perfect insect which comes from it may not be the species which the larva should have produced, because the natural enemies of some insert their eggs in the flesh of the latter, upon which their young feed. The attacked larva, before it dies, is often able to form a cocoon, and from this the parasite makes its appearance. For these and similar reasons it is necessary to have some knowledge of entomology to enable us to guard against the insects likely to injure us.

We intend to give an account of various insects in a series of articles of which this is the first; and although the history of some of them may seem to have no practical application, it must be remembered that a knowledge of any species may throw light upon others, and afford hints for their proper investigation. Most general works on natural science published in this country are devoted to foreign species which the reader may never be able to see, whilst the commonest American kinds are unrepresented. To remedy this defect, we have determined to give figures illustrative of American species and habits, taken from the specimens themselves.

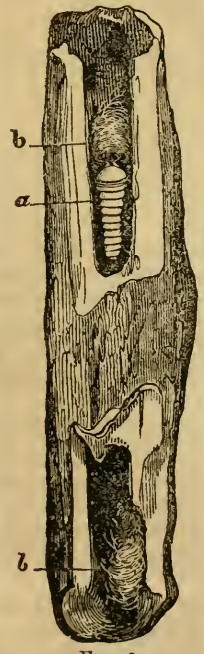


FIG. 2.

ELAPHIDION PUTATOR, (FIG. 1.)—This is a small coleopter, (an insect with the true wings generally protected by hard wing covers or *elytra*,) of a brown color, with pale scattered spots. The antennæ are as long as the body in the female, and longer in the male. The larva lives in the small branches (generally in the centre) of oak, hickory, and chestnut, forming a flattened perforation some inches in length. The larva is a soft whitish grub, with stout black jaws, and when it has attained its full size (about the end of summer) it cuts the branch from the tree by a transverse cut, leaving the bark entire. The storms of the fall and the winter cause the branches to fall with its tenant; but previously to this, it has nicely closed the end of its perforation with a plug made of shreds of wood and sufficiently close to exclude water.

The annexed figure (2) represents a fragment of a branch of shellbark hickory which was probaly cut off by a different species, at both ends, with a plug (*b*) in each. It is cut open to exhibit the larva, which is represented at *a*. It has the anterior end large, somewhat as in the larva of BUPRESTIS. This enlargement disappears just before it changes to the pupa state, and most of the specimens are found in this condition about the middle of April in Pennsylvania. The larva has three pair of minute feet which assist it in moving along its burrow.

The fragments of wood which it inhabits are from two to four inches long, and the part to which it confines itself when it closes the ends is usually two or three inches in length. The plugs are usually inserted at the ends, although they are

Fig. 3.

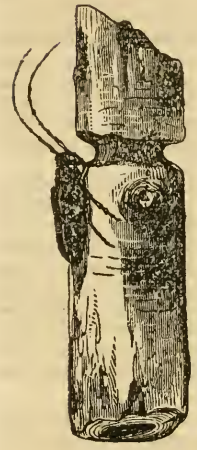


Fig. 4.

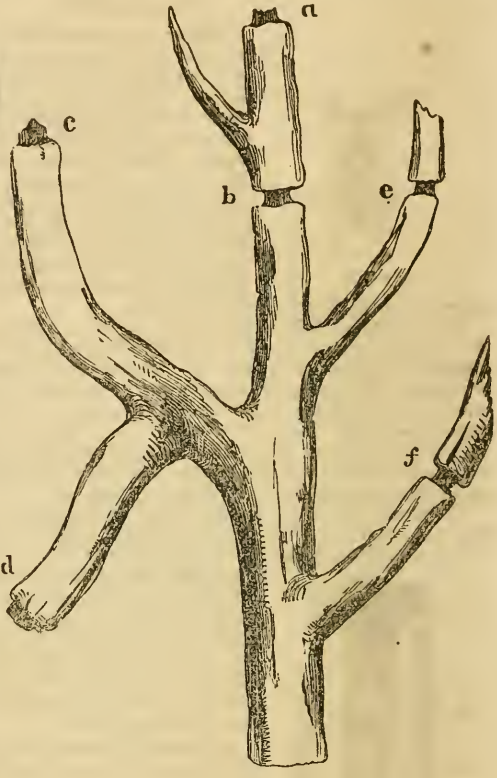


Fig. 5.

sometimes half an inch from them. The fragments cut off vary in thickness from the fourth of an inch to an inch, and figure 3 exhibits an end view of a thick one. The mandibles of the *imago* or perfect insect are sufficiently strong to enable it to eat its way out of the prison it had constructed for itself.

Oncideres Cingulatus.—This insect was first described by Say in the Journal of the Academy of Natural Sciences, vol. 5, p. 272, 1825, and its habits were discovered by us and published in our "Materials towards a History of the Coleoptera longicornia of the United States;" Am. Phil. Trans., vol. 10, p. 52, 1837.

In our walks through the forest our attention was frequently drawn to the branches and main shoot of young hickory trees, (Carya alba,) which were girdled with a deep notch in such a manner as to induce an observer to believe that the object in view was to kill the branch beyond the notch; and extraordinary as it may appear, this is actually the fact, and the operator is an insect whose instinct was implanted by the Almighty power which created it, and under such circumstances that it could never have been acquired as a habit. The knowledge of girdling is unknown to the insect, whose life is too short to perceive its effects and to foresee the necessities of its progeny during the succeeding season.

This insect may be seen in Pennsylvania during the last two weeks in August, and the first week in September, feeding upon the bark of the tender branches of the young hickories. Both sexes are rather rare, particularly the male, which is rather smaller than the female, but with longer antennæ.

The female makes perforations in the branches of the tree upon which she lives,

which are from half an inch to less than a quarter of an inch thick, in which she deposits her eggs; she then proceeds to gnaw a groove of about a tenth of an inch [illegible] branch, and below the place where the eggs are depos-

their foliage withered during the last few summers from such a cause. Should the insect in question increase so as to become troublesome, the infected branches should be cut off in July and burnt.

Fig 5 is a slightly modified representation of the top of a hickory tree, from a specimen now before us, which presents the unusual number of six girdlings, which were probably made in as many successive years. First the principal shoot at *a* was cut, and before the young shoot below it had acquired sufficient size to tempt an attack, the second cut *b* was made; then *c* probably followed, and a downward shoot *d* was the result; and this being cut, *e* and *f* may have followed. As the decaying portion which is not eaten by the larvæ is apt from its tender attachment and the rapidity of decay to drop off, truncated branches, like *c, d,* are frequently to be met with.

This insect is more than half an inch long, and of a brown color, spotted with yellowish, and varied with ashy, a band of the latter crossing the middle of the elytra, the base and end of which are reddish brown.

Guilding figures ONCIDERES AMPUTATOR in the Linnean Transactions, vol. 13, pl. 30, in the act of girdling a branch, but he did not discover the object of the proceeding. His figure is copied in *Insect Architecture*, page 240.—*Pa. Farm Journal.*

HOW WE PAY FOR TEA.

"THE imports into the United States from China, in 1844, amounted to $6,687,171, while our exports to that country were only $1,520,170—balance against us, $5,167,001. In 1849 our imports were $11,904,754, exports $1,490,945—balance against us, $10,413,809. In five years our imports increased fully 60 per cent., and our exports did not increase over 12 per cent. It appears that during the same period, that is, in 1844, the exports from Great Britain to China amounted to $35,929,132, while her imports were only $17,925,350—leaving a balance of trade against China of $18,003,782. The principal articles of export from Great Britain to create this large balance against China consisted of raw cotton and cotton fabrics; the raw cotton from British India, and fabrics from her home factories; both of which, and of a better quality, can be more cheaply supplied from this country."

It would be difficult to find a more happy illustration than is presented in the above, which we take from one of our exchange papers, of the system of the modern British politico-economical school, in which the late Secretary of the Treasury, Mr. Walker, is so distinguished a professor. Tennessee raises cotton and desires to purchase tea. Instead of converting the cotton into cloth, by the aid of the waste labor of her own plantations, and the waste water-power of her streams, and thus sending it abroad in the most compact and least expensive shape, she sends it, and perhaps the food to feed the workmen, in the most bulky and expensive form, to Manchester, that the one may be eaten while the other is being spun and woven. That done, the cloth goes to China to pay for the tea transported to the banks of the Tennessee—the labor expended in carrying the cotton back and forth being ten times more than would have been required to spin and weave it on the ground, and the capital employed being also ten times greater than would have sufficed for purchasing the machinery for spinning and weaving it.

So great a waste of labor and capital as is forced upon this nation by the anxiety of our Democratic friends to maintain the monopoly power of England is totally without parallel in the world, and our Southern friends would be satisfied of this, could they but be persuaded to study Adam Smith, and learn from him that the true place for the artisan is in that at which are grown the food and raw materials, making a market on the land for the one, and fitting the other for cheap transportation to distant markets.—*Republic.*

STRANGE ABSURDITY.

We place the above on record as a curiosity. It is from the pen of the editor of the *Democratic Review*, a staunch supporter of the system which looks to securing to England, now and for ever, a monopoly of the machinery for converting cotton and wool into cloth, in order that the people of Illinois and Ohio may continue to be compelled to send their corn and pork to Lancashire in company with the cotton of Mississippi and Alabama, " to be returned in goods to the localities from whence they came." It certainly is " a strange absurdity ;" yet, strange and absurd as it is, our reviewer lends all his aid to perpetuate its perpetration.

NEW PROCESS IN THE MANUFACTURE OF SUGAR.

The following, from a late number of the *Mark Lane Express*, may have interest for some of our Louisiana friends. Let us, by the way, inquire why it is that we meet with so little encouragement in that quarter? Is it that we have demonstrated that now they give five bales of cotton in exchange for one, whereas they ought to give but three, if they would force the loom to come to the cotton, instead of sending their cotton to the looms at Manchester?

Sugar.—Several samples of sugar of a very superior quality, as respects granular texture and brightness of color, have recently attracted considerable attention in the Bristol sugar market, which has led to much inquiry as to the process of manufacture among the merchants and proprietors of West India estates. It appears from inquiries we have made, that, by a combination of several patents—among others, the cleansing and drying of sugar by centrifugal force—sugar which formerly took three or four weeks to refine, is now done in as many minutes. Sugars heretofore unsaleable in the English market are, by the new process, converted, as if by magic, into an article realizing 36s. ($8 64) per cwt. The machine by which the process is carried on, is very cheap, portable, and easily worked, and the raw produce shipped in a state which prevents the waste of some 12 to 15 per cent. in the shape of leakage from molasses. Next to the discovery of the vacuum pan, the improvement of Messrs. Fingal and Son, of Bristol, ranks first in the scale of importance; and they have happily succeeded in combining the interests of various patents held by Messrs. Seyrig, Hardman, Rotch, and others.

TO THAW FROZEN PLANTS.

To preserve vegetable life, after having been frozen, the same precaution is necessary as in the case of animals. Sudden elevation of temperature, by the application of heat, proves fatal in both cases. When the noses of French soldiers became frozen and lost all feeling, in their retreat from Moscow, they were preserved by rubbing them with *snow*. The restoration of vegetables frozen while alive is to be accomplished by the application of cold water, but not when the sun is shining on them. For

reasons that are here made obvious, early Yorks and other things should be planted on the north sides of ridges.

That portion of trees standing on the north side of a wall and rising above it, so as to be exposed in early spring to the action of the sun, has been known to be killed, while the residue, shaded by the wall, and therefore acted upon by the more gradual elevation of vernal temperature, has escaped uninjured; on the principle that is known, that, if a man's feet are frozen, he will lose them if plunged into hot water. *Verb. sap. sat.*

PROSPECTS OF THE FARMERS.

The Wheat Crop in Michigan and Indiana.—An extract of a letter, dated Sturges, St. Joseph county, Michigan, says:—

"The report circulating East, relative to a probably small wheat crop this season in Michigan, is wholly without foundation. The prospects for a very heavy crop were never so favorable in this State or Indiana as at the present time. Our road will groan this season with the freight. We are running down any quantity of wheat and flour now, and I think the new crop will come in as soon as the old is off, if not before."

As the growers of this grain will probably desire to know what are the prospects before them in relation to the "great grain market of the world," we give them the following extract from the Liverpool trade circulars of the close of April:—

The Corn market is very dull. Western Canal Flour, 19*s.* *a* 20*s.*; Wheat, 5*s.* 4*d.* *a* 5*s.* 8*d.* for red, and 6*s.* *a* 6*s.* 2*d.* for white; Corn, 30*s.* *a* 33*s.*; Indian Meal, 14*s.* 6*d.*

Transactions in Beef unimportant; Pork moves slowly; demand for Bacon not so active; Lard firm; Tallow has not varied in price; Cheese meets a moderate demand.

Western Canal Flour, in Liverpool, $4 56 to $4 80 per barrel; wheat $1 28 per bushel; transactions in beef unimportant, and pork moving slowly, while bacon is less active, &c.

In reading this, we beg them to recollect that it was for the purpose of obtaining such a market as this, that they were required to destroy the great domestic market furnished by the producers of coal, iron, and cloth. Had the tariff of 1842 remained unchanged, we should now be producing six millions of tons of coal instead of three; a million and a half of tons of iron instead of half a million; and we should be consuming eight hundred thousand bales of cotton, instead of five hundred thousand, and twenty million additional pounds of wool; and the *additional* value given to the raw materials used for these purposes would have been *one hundred millions of dollars*, every dollar of which would be the product of labor, and that labor representing the products of the earth in its various forms of food, clothing, and the use of houses, mills, and furnaces. Such is the market they have been required to sacrifice, in exchange for one in which they obtain for a barrel of flour $4 56, minus freight and commissions. How long will it be before they will learn that the tendency of the present system is to build up the *middleman* at the cost of both consumer and producer?

How to Smoke a Greenhouse Effectually.—Take a sheet of touch paper, spread it out, and roll half an ounce or one ounce of tobacco up in it, light it at both ends, put it into the house, leave it there, remain outside with your hands in your pockets, and the job is done. In the morning all the green flies will be dead.—*Edward Huggins, Boston, Lincolnshire.*

FLAX COTTON.

A SPECIMEN of flax cotton has been prepared by Mr. Hayward of Buffalo, a gentleman of great experience in flax culture, who is confident that he can produce the article in a large way for six cents per lb. The material is not bleached, but in all other respects has the appearance of fine Sea Island cotton, and feels like it.

From the North, the East, and the West, we have accounts of successful efforts on the part of our own countrymen for the preparation of flax to be used as a substitute for cotton, and from England we learn that various large mills have made extensive contracts for supplies of this material. Nevertheless, we are not yet satisfied that this revolution is so near being accomplished as these various accounts would seem to indicate. A great revolution it will be whenever it shall come, for the immediate effect will be that of enabling Russia and Germany, and other countries of Europe, not only to grow, and spin, and weave flax, thus making a market on their land for its products; but also to enter into competition with the South for the supply of Great Britain, whom Southern policy has encouraged in her efforts to secure to herself a monopoly of the machinery for converting cotton, or flax cotton, into cloth. Although we do not yet believe that this revolution is so close at hand, we cannot forget that

"Coming events cast their shadows before;"

and we cannot but believe that what has already been done is but preliminary to the last great act in which the work so long desired, and for the accomplishment of which Napoleon offered so large a reward, will be accomplished. At all events, it seems to us that the time has arrived for the planters to ask themselves, what will be their position if it should happen to be accomplished? Instead of seeking to attract the cotton machinery to their own cotton fields, they have kept it at a distance, and it is now every where located among the people of flax-growing countries, who will then produce flax more cheaply than they can import cotton. It may be that the evil cannot be remedied—that the time of trial is at hand. It may, however, be otherwise, and years may yet elapse before flax shall be spun on cotton machinery. If so, should they not at once determine upon a change of policy, and place themselves in a position to enable them to ship cotton cloth to all the nations of the world, instead of cotton? That, however, they can never do under the tariff of 1846, which is daily diminishing the home consumption of cotton, and increasing their dependence on the flax-growing people of the world.

NEW FLAX-BLEACHING PROCESS.

WITH regard to the question whether the new flax-bleaching process of M. Claussen will adapt that material to the machinery used for spinning cotton, on which we inserted a letter from a correspondent a fortnight back, the *Manchester Guardian* of Saturday has the following remarks:—

"With reference to the alleged discovery of a process for preparing flax so as to render it suitable for spinning on cotton machinery, we feel bound to say, that notwithstanding the repeated statements to that effect, we cannot learn that a single ounce of yarn has been spun on cotton machinery from flax prepared by M. Claussen's process, either in Manchester or in the neighborhood. All that we can ascertain is that one attempt has been made near Ashton-under-Lyne which failed entirely; that a firm of fine spinners near Bolton, who had been requested to make another experiment, were satisfied when they saw the material that it was altogether unsuited

for their machinery, and that it has been sent to a firm of spinners and manufacturers at Rochdale, who have not, we believe, yet made any report upon it. All we have heard upon the subject from parties who have seen the material has tended to confirm our previous impression, that as a substitute for cotton it is likely to prove an entire failure, except possibly in the production of very low and coarse yarn, to which it may prove to be to some extent applicable. For all finer purposes it is unfit, not only by its general coarseness of fibre, but by its harshness and elasticity, which must always prevent it from making a fine and even thread when spun on cotton machinery. So far, therefore, the difficulties which have prevented the success of former attempts to substitute flax for cotton have not, in our judgment, been removed."

And with reference to an analogous process in which a priority of invention has been claimed by a Mr. Slack of Renfrew, it is added:—

"Both are, as it seems to us, equally unsuitable for cotton machinery, and, so far as we understand the statement on behalf of Mr. Slack, he does not claim for it any such capability. It appears, however, exceedingly well adapted for the production of fine yarn on ordinary flax machinery—the fibres being minutely separated from each other; and we have seen some very beautiful yarn which was stated to have been spun from it by the ordinary process in the north of Ireland. The process it has undergone also appears to have made some chemical change in it, which renders it more capable of being dyed bright colors. Flax is generally, we believe, the most intractable material with which the dyer has to deal; but the flax prepared by Mr. Slack's process seems to take readily a number of bright and delicate colors; whether fast or not, we are unable to say. In all this, however, the bulk of our readers will find comparatively little interest. The discovery of any material that would serve as a good substitute for cotton, and diminish our dependence on the precarious seasons of the cotton-growing States of America, would indeed be important to them; but for any such discovery they must look, we imagine, to other sources than the patents of M. Claussen and Mr. Slack."—*Times.*

A Hoosier Pig.—Mr. James Rogers, of Monroe county, Indiana, slaughtered a pig only seven months old, which weighed net 215 pounds. It had no extra care or feeding.

If early growth, fatness and weight be the object, why go to England for pigs—except from the long habit of going there for every thing? The Americans in attendance at John Bull's great show in May will not be less than 10,000, and will leave there, on an average, $100 each, a million of dollars! Mr. Van Buren, the friend of "free trade," appointed by the New-York State Agricultural Society, at the head of its commission to visit the Show, declines attending. Perhaps, with his well-known sagacity, he foresaw that the Government of England was about to be forced into an abandonment of the ruinous system of admitting agricultural produce *free*, for the sake of enabling John Bull to continue to supply the whole world with his machine-made products, in exchange for their products made by hand power? We trust the commissioners from the State Society will be instructed to report on their return the effect of free trade on the agricultural interest, and how far it is wise in American farmers, as recommended in Governor Wright's address,—posthumously delivered and published by that Society,—to depend on competition with the world, in the great grain markets of the world. A system under which, we are told by a gentleman pronounced to be "at the *head* of a profession he so much adorns," the agriculture of New-York has been constantly, and is still declining. No wonder it is—and so it will continue to do, as long as we surrender the home market in a vain ridiculous attempt to compete against the down-trodden, half-starved labor of Europe, in the great grain markets of the world,meaning Mark Lane, Cheapside, London! Ah! we are a most wise—a most wonderful people.

A MAN OF BUSINESS.

At the Greene County, New-York, Agricultural Fair, an address was made by Colonel Zadock Pratt, from which we take the following passage:—

And now I will show you the advantage those dreary hemlocks have been to the farmers of our mountain towns. Since I first engaged in farming, it has been my lot to employ over fifteen thousand years of other men's labor: an army of thirty thousand men have I employed, and I have paid those men, for their labor alone, over two million five hundred thousand dollars. I have cleared over ten thousand acres of land, used over two hundred thousand cords of hemlock bark, and paid over half a million of dollars for it. Used and worn out five hundred horses and one thousand yoke of oxen. Used two hundred thousand bushels of oats, one hundred and twenty thousand tons of hay; thirty thousand barrels of beef and pork, and nearly one hundred thousand barrels of flour, and potatoes without number or measure.

I have tanned one million two hundred and fifty sides of leather; my usual disbursement is over five thousand dollars per day, and I have used in my business here over ten millions. Every laborer received his money, yea, every man his penny, in peace; and to the credit of this community be it said, that I never had a side of leather stolen, and never was chosen defendant in law on account of my business transactions, during my residence among you. The great object of my living is to be useful. Live with your neighbor, and not on him. Allow me, gentlemen and ladies, to conclude by congratulating you upon the rich blessings of health, power and prosperity which surround you; and may succeeding generations do as much as you have towards national wealth and industry, which are the safeguards to our independence.

We desire particularly to call the attention of our agricultural readers to the extraordinary facts contained in the above extract, as strongly illustrative of the advantage resulting from bringing the consumer to the side of the producer. Throughout the country men are every where engaged in destroying timber, while sending their hides to a distance to be tanned. One of our friends wrote us some time since that he had offered forty dollars an acre to have his land cleared, but that the timber was so heavy that he could find no one to undertake the job. If such men were once to determine to use their own home-made iron, and home-made cloth, and shoes and saddles, they would speedily find a market for their timber, in which they would *receive* for it as much as they now *pay* for its destruction. That market they would now have, had the tariff of 1842 been maintained, for its object was that of making every where a market on the land for the products of the land.

HOW VIRGINIA POLICY AFFECTS VIRGINIA INTERESTS.

A little more than eighty years ago, says the *Richmond Republican*, the imports of Virginia amounted to $4,085,472, and those of New-York to $907,200. In 1849 the imports of Virginia amounted to $241,935, and the exports in domestic produce, $3,363,422; the imports of New-York to $92,567,369, and her exports $36,738,215.

Such facts as these cannot be too frequently repeated. *They are burningly disgraceful; but if a red-hot coal on the back of a terrapin will start him on his travels, it cannot be applied too soon or too often.*

We cannot but rejoice to see that our Southern friends are at length opening their eyes to the destructive consequences resulting from the separation of the plough, the loom, and the anvil. But half a century since,

Virginia stood at the head of this great confederacy; but from that time to the present she has been steadily sinking in the scale, while other States have been as steadily rising in it; and from day to day free trade, as it is the fashion to call the monopoly system of England, has been rendering her more and more tributary to her neighbors and to England. The reason for all this is to be found in the fact that Virginia has made no market on the land for the products of the land, and that her farmers have therefore been enabled to return to the soil no part of the refuse of its products, which has therefore been impoverished, and its owners have been compelled to seek new soils, to be again exhausted. In exhausting their soils, they have been wasting their capital, and they are now surprised to find that they are poor; yet are they not prepared to adopt the true and only remedy, by aid of which they can be enabled to enrich their land and themselves.

New-York imports hides, and by aid of the bark of her forests converts them into leather, and her mechanics convert the leather into shoes, saddles, harness, and a thousand other things that aid in making cargoes to be exported for the payment of the men who produce sugar, coffee, hides, and other commodities required for our consumption. Her land is thus cleared, new farms are created, and her population and her commerce are both increased. Virginia leaves her trees on the ground until they decay, and she sends her hides to New-York to be tanned, while her cleared lands are abandoned by their owners; and she then wonders that her population and her commerce both diminish. It is time that she should awaken to the fact that diversification of employment is indispensable to prosperity, and that to give her that diversification was the object of the tariff of 1842, in the destruction of which her representatives so largely aided.

AGRICULTURAL IMPROVEMENT OF POOR SANDY LAND IN ENGLAND, LIKE THAT IN EAST JERSEY.

It was lately stated publicly at a meeting of an Agricultural Society, that there were men now living who could remember when 40,000 acres of land, belonging to the late Lord Leicester, in Norfolk, which are now worth £40,000 ($200,000) a year, were nothing but rabbit warrens and barren heaths. Lord Yarborough had 30,000 acres of land in Lincolnshire, which formerly let at 4*s.* 6*d.*, ($1.10,) and at this low rate ruined almost every one that rented it. This same land now rents for $6 an acre, to farmers who are making large fortunes, (that was in 1845,) many of them keeping their carriages.

The Reverend lecturer, Doctor Buckland, went on to say, that it was the custom for Lord Leicester, when applied to for a farm, to ask the applicant *how much capital he had.* "I have farms," he would say, "of all sizes, for every amount of capital, from two thousand down to two hundred acres."

It was not surprising, said the Reverend Professor, that that farmer could not succeed, who, having a capital of *only* $5,000, took a farm that required £2,000, or $10,000.

The want of capital in this country in the hands of the owners of the fee simple, is a great drawback on agricultural improvement. It is as

necessary to put the land in motion, and to give activity to it, and profit to the labor applied to it, as it is to put the wheels of a manufactory in motion, or to start a ship on her voyage.

HIDE NOT YOUR LIGHT UNDER A BUSHEL.

"That learning, whatever it may be, which lives and dies with the possessor, is more worthless than his wealth, which descends to posterity."

In reading, some days since, a memoir of Buckminster, the celebrated preacher, we were struck with the sententious force and truth of the passage quoted; and could not resist the inclination to record it, for the benefit of those farmers and planters whose habits of close observation, and whose sagacity, have enabled them to impart instruction in the practice of their pursuits. How readily we all unite in reprobating the meanness of those who lock up their large possessions, spending their days in wretched anxiety about further accumulations, and in fear of some pecuniary reverse that may diminish the wealth they have not spirit to use for the good of society, or the relief of the wretched!—and yet in what respect does the wretched miser differ from him who hoards up knowledge, that, if imparted, might be the means of increasing the comforts of his fellow-beings? Let the farmer, then, who sees any thing which he knows to be wasteful or erroneous in the use of agricultural capital or labor, remember, "that learning, whatever it may be, which lives and dies with the possessor, is more worthless than his wealth, which descends to posterity." The best way for the farmer to transmit his knowledge to posterity is to commit it to paper, and hand it over to the Editor of an Agricultural Journal, of which there are so many ready and willing to receive and distribute it.

ON THE LOVE OF FLOWERS, AND A TASTE FOR GARDEN SCENERY.

There is nothing we envy more, the loss of which is more to be deplored, than the taste which was once entertained (with the means to indulge it) in the old Atlantic States for the *care and cultivation of their gardens.* Even we can remember, when all the best families in Calvert county, Maryland, cultivated roses, and honeysuckles, and lilacs, and fleurs de lis, and pinks, and tulips, and the snowball, and the mock orange, (in which the little sparrow "built his nest,") and the flowering almond, and various lilacs, and thyme, and sweet-william, and currants, and gooseberries, and plums, and pears. Scarcely a garden was without some or most of these. What has become of them, and of the taste that demanded them? By what have they been superseded? By a few straggling cabbages and a few potatoes, and by a love of party politics and liquor! A modern writer well observes:—

The main argument for enforcing attention to such seemingly unimportant considerations as the above—unimportant in the estimation of a cold, calculating age like the present—rests on the fact, that a taste for the beauties of garden scenery

is of high value when found existing in the minds of those individuals who, in a collective capacity, constitute a nation. The innate and immortal faculties of man, which may be largely gratified in a future state of existence, and which, even in this life, render him capable of receiving pleasure in the contemplation of beautiful objects, repay their cultivation by tending to the production of a refinement in manners, both in the case of nations and individuals. It is universally admitted that a love for flowers, or for other objects of natural beauty, indicates a degree of refinement in that bosom where it predominates and is cherished; and the authentic pages of history inform us, that in all ages a national taste for gardening, architecture, and the fine arts, has been a sure sign that civilization was gaining the ascendant over former barbarism. It becomes, then, a national object, to foster and provide for the gratification of feelings of desire after the pleasures afforded to the mind by those two great principles of landscape gardening—beauty and harmony.

EFFECT OF MECHANICAL PURSUITS UPON MIND.

I DO not wonder that great men have been born mechanics: for those who have been brought up exclusively in drawing-rooms, intelligence is a game, a recreation; for those who have held the sword or the helm, who have driven the plough or worked with the chisel, intelligence becomes a passion, a force, a beauty, a worship, a love divine. It is from the stall, the shop, the work-room, that the most powerful minds have issued; Molière from the upholsterer's, Burns from the farmers, Shakspeare from the hosier's shop, Rousseau from the wheelwright's. Long engaged in a struggle with physical nature, they all took refuge with joyful enthusiasm in the free domain of thought. Even an inferior mind would become tempered to strength in these mechanical apprenticeships; and if ever the spirit of reform which is seizing on the world should extend to the act of creating citizens, I doubt not that good sense will gain a victory over custom, and that one of the most important parts of every education will be henceforth the due admixture of the development of the mind and of its action on the elements of nature.

The above remarks are from the pen of M. Chastel, a distinguished French *savant*, who rose to eminence from the humblest mechanical station; and we commend them to the careful consideration of those of our readers who may still retain any belief in the doctrines which led to the passage of the tariff of 1846, and which teach that we are bound to remain an agricultural nation, dependent upon the people of Europe for the use of the machinery required for converting our food and our wool into cloth—and our food and *their* ore into iron. A purely agricultural population is necessarily a scattered one, in which there can be little exchange of thought; and when such exchange does not take place, there can be little improvement of thought. A scattered agricultural population maintains, with great difficulty, very poor schools. Diversification of labor enables more people to live on the same surface, and with each step in that direction the schools increase in number and quality, with with a constant diminution in the difficulty of maintaining them.

ON THE PRINCIPLES OF BEAUTY IN RURAL SCENERY.

A MODERN writer observes: The grand characteristic of picturesque park scenery is quietness and repose, or what may be termed the passive sublime. The changeless green of the smooth grass tends to the production of this expression; an expression that is in vain sought for in scenery where the ground bears the marks of having been disturbed by the spade or the plough. Trees form a principal ingredient in park scenery—and more especially native old trees, as distinguished from young species of foreign origin, protected by artificial means, such as wooden or iron railings. The waving motion of branches and trembling of leaves add to the character of sublimity possessed by aged trees, and detract not from that quiet repose

which the presence of moving objects of an artificial kind is sure to destroy.* The feelings, associated with the presence of trees that have for ages withstood the raging of the tempest, are of a highly conservative nature, and are fitted to excite veneration for long-established laws and usages. The presence of cattle or sheep is favorable to an expression of repose, whether they be in a moving state, or resting under the shade of trees. They also impart a cheerful appearance to the landscape; and, lacking their presence, an otherwise beautiful scene is liable to partake of dulness. Immovable artificial objects, such as houses and bridges, are admissible in quiet rural scenery, inasmuch as they interfere not with an expression of repose. But clear and still, or smooth-flowing water, is the centre which unites such scenery in one grand whole. The effects of clear, smooth-flowing water, in a landscape, are thus described by Homer:—

"And where Piëra, rolled through banks of flowers
Reflects her bordering palaces and bowers."

The associations connected with still water are familiar to the mind of every one, and have been thus beautifully clothed in language by Scotia's ancient bard, in portraying the countenance of a mighty chief who had been slain in battle:— "When thou didst return from the war," says Ossian, in lamenting the death of Morar, "how peaceful was thy brow! Thy face was as the sun after rain; like the moon in the silence of night; calm as the breast of the lake when the loud wind is laid."

THE DESTRUCTION OF WOODLICE.

Most gardeners are much annoyed with woodlice. They breed in heat both winter and summer, and they possess an appetite of the most accommodating kind. It matters not whether it is the blossom of the Cucumber or that of a Pine-apple that comes in their way, the fruit of a Melon or that of a Cucumber; they will eat the nauseous leaves of the Lisianthus Russellianus with the same relish as they do Mushrooms, Carrots, Parsneps, Beet-roots, Scorzonera, and Salsify; they like for their salad Chicory leaves, which are not a bit too bitter for them. I have lost many an ounce of Strawberries through their depredations, and also many an early Cucumber that would have brought me 3s. 6d. in the market. The means I have employed for their destruction have been toads, which are effectual; but they are expensive, being 4s. a dozen. Many of them die, and except they are kept in quantity, the woodlice cannot be kept down. I have also tried pots with hay in them, Carrots, sliced Turnips, Cabbage leaves, bread, poisoned ditto, poisoned Turnips, and boiling water, when it could be used. As to the time for destroying them, we all know that if we kill a wasp in spring, thousands are at once destroyed. It appears, then, that the best time to kill woodlice is towards August, when they have ceased breeding, and are spread all over the grounds; attack them then before they return to their winter-quarters, to which they repair with alacrity when roused. I once formed a Mushroom bed parallel with an old deal fence; but, as might have been anticipated, I did not gather a single Mushroom; every time the bed was uncovered, the woodlice made over the ridge for the fence with great speed.

My object now, however, is to state that, from some trials I have made, I am convinced that woodlice may be killed by the use of bantam fowls. This plan may be put in operation by any one, even at this time

* Who that ever underwent can forget the influence oft produced by a solitary walk in the forest, at Buena Ventura, near Savannah, so beautifully described in Bryant's celebrated Forest Hymn?

We believe the ground has been lately dedicated to the appropriate purpose of a cemetery, by the spirited and gentlemanly proprietor of the Pulaski Hotel.—*Ed. P. L. & A.*

(December) of the year. I first had a hundred woodlice caught at a rubbish heap, and gave them to three bantams; they ate them up in something less than two minutes. I had these birds in attendance when turning over a rubbish heap, and not a woodlouse was allowed to escape, nor any insect, the bantams devouring every thing. It will thus be seen that if bantams were encouraged and brought up in gardens, they would effect much good; and I am of opinion that it will soon be found to be as necessary to keep bantams to kill vermin, as it is to keep cats to keep down rats and mice. They will save various crops from injuries to which otherwise they would be exposed. They would scratch a little, to be sure, but so do cats, and if the smaller kind of bantams are kept, (those about the size of a partridge,) their scratching would do little harm. The reason why gardens are generally nurseries for all sorts of insects is, because they are guarded by cats, traps, nets, &c., in such a manner that no bird can approach them. If it were not for the wild birds of the fields, the farmers' crops would be eaten up with vermin; and I think that birds have as much right to a little of the fruits of this earth as we have, for helping to keep destructive insects in check. It will be the gardener's own fault in future if he is much troubled with woodlice.

The above was written last December. This spring I had a temporary cage placed at the end of a twelve-light cucumber pit; a brick was driven out in order to allow the ingress and egress of a large brood of bantams. I had those for this experiment from a fancier of the name of Dawson; they ate up every insect in less than a week. Another year, I intend to have a hole in all the pits, and move the young bantams from one pit to the others. I have a rubbish corner where all the rakings, leaves, and general refuse of the garden are put. This place is inclosed with four feet laths all round, and a brood of bantams was put there. This was at one time the grand breeding place for all sorts of insects; but now it is the most valuable corner which I have. The moment an insect comes to the surface, it is eaten up. I have had three full-grown bantams at large nearly all the summer, (Sir John Seabright's Silver Spangled;) and to see those birds, with their hawk's eyes, walking about through the sheds, houses, mushroom places, up and down the alleys of the pits, &c., picking up every crawling insect, is very satisfactory. One bantam is worth fifty toads. I do not mean to say that in a general kitchen garden, it would do for them to be at large at certain seasons; but even then I should make them quite welcome to a few cabbage or lettuce leaves, for the great benefit that is to be derived from their destroying every sort of insect, except the slug and snail, which a few young ducks in the autumn and spring would soon remove.—*Cuthill.*

PROPAGATION BY LEAVES.

I HAVE been in the habit for the last three years of raising Camellia stocks from leaves, and I consider the plan an excellent one. The Camellia pæoniflora, being the strongest growing sort with which I am acquainted, is the one I select for the purpose. In March, with a sharp knife, I cut off as many leaves close to the branch as I want, taking, of course, the buds off with them. The leaves are potted immediately in 48-sized pots, in peat and sand, and are placed about one third their depth into the soil, and the pots are then plunged into a tan-bed, where no fire-heat is

employed; they are covered with a hand-glass, kept moderately moist, and shaded when necessary. These leaves strike root, grow vigorously, and in two seasons make good stocks for grafting on. This mode of raising Camellia stocks is very convenient, for it is often easier to procure leaves than grafts, and the plan answers well when leaves are sent from a distance. In April, 1843, a blossom of a new double Camellia was sent to me; it had travelled upwards of 300 miles, and was so dry that I could not discover its color; there were, however, two or three leaves attached to it, one of which was treated as above, and I have now from it a very strong plant, 5 feet 6 inches in height, producing nine flower-buds ready to expand. The plant has been stopped twice in order to cause it to throw out branches, which are now eleven in number; the circumference of the stem is 1½ inch at the bottom. I likewise raise Orange stocks in a similar manner; the leaves are cut off in August, and are potted, but not covered with hand-glasses. The stocks which I use for Orange grafting are Citrons, which, being strong growers, make excellent plants by the following summer. The Citrons, I imagine, may however be grown much quicker by putting in the leaves in February instead of in August. I have no doubt that the plants will be sufficiently strong to be grafted by the end of July or early in August.—*J. Markham, The Gardens. Hewell.*

GRAVEL WALKS AND ROADS.

In the very humid and comparatively sunless climate of England, nothing conduces more to the enjoyment of a country residence than a good, firm, and dry walk, upon the surface of which the ladies of a family can, without annoyance from dirt or damp, take their daily exercise. To be what it ought, it should be available immediately a heavy shower has ceased; and to this end it is desirable to get a hard, smooth surface, and to carry off the surface water by frequent gratings to an underground drain, not allowing it to saturate the materials of which the walk is composed, or the ground on which it rests; because in proportion to the absorbency of the materials will be the unsoundness of the walk after severe frosts. Both road-making and walk-making are frequently ill understood by those who attempt it.

In the ordinary course of proceeding to form a road or walk, it is usual to make a deep excavation, which, when filled (as is usual) with large and coarse gravel, becomes a receptacle for the drainage of the adjacent ground, thus securing the greatest evil which can happen, by the constant saturation of its foundation. A better plan is to raise the edges of it above the adjoining surface, which keeps it dry. It is necessary that there should be six inches in thickness of gravel, for otherwise, however firm and good the surface might be, the worms would cast through and disfigure it.

Nothing can be a worse practice than the employment of large bodies of rounded pebbles at the bottom of a road or walk. After all, it is the native soil which carries the road, and if this is covered or roofed with materials which exclude the surface water, it will last; four inches of hard materials is sufficient; if pebbles, they should be broken so as to form a compact solid body, which they do when angular. Rounded pebbles, independently of the facilities which their interstices afford for the lodgment of water, are ever rising upwards; when pressed upon any point of their circumference, they move and become wedged by the falling of finer materials around them; and as this is always going on, in time they get to the surface, making it rough and uneven. In no instance should any great amount of convexity be given to the surface of a walk; its crown should not be raised above the level of the margins; if the water will just fall to the sides, where the gratings are placed, it is all that is necessary; its outline cannot be too accurately defined; it is avowedly a work of art, and should have the impress of the nicest artistical execution in all its details.

However good the material which forms the face of the walk may be, the

action of the atmosphere, alternate frosts and rain, will in time decompose the surface, in the same manner as it decomposes the hardest rocks, and by its slow but sure agency effects vast changes in the surface of the earth; the particles of earth absorb water, they expand by freezing, and when they thaw, become soft and friable, presenting a fit nidus for lichens, mosses, &c., to vegetate in; but with a well-made walk we have only to scatter a little bright and fresh gravel on the surface, previously loosening it slightly, and it is restored to its former beauty. I have long discontinued the old practice of breaking up the walks deeply; and the more ancient one of leaving them roughly broken and exposed to the frost, snows, and rains of winter, cannot be too highly deprecated.

Asphalte and paving have both been recommended for forming garden-walks, but I think there are few persons who would not prefer the bright warm color of good gravel, where it can be procured. I have been in the habit of forming a sort of concrete with the gravel we get here, which answers well; it is well watered and rolled to the consistency of puddle when wet; it is afterwards allowed to dry, and sets as hard as a rock—the first shower of rain restoring it to its natural appearance.

Walk-making, if well done, is very expensive; of course varying with the facility of obtaining fit materials; so much depends on their proximity to the scene of operations, or having to be carted from a distance, that perhaps no two places would come under the same estimate. Both walks and roads should be made upon the same principle—that of preserving a moderately thick stratum of angular materials from absorbing the surface water; and yet so little is this understood, that thousands of tons of stone are yearly thrown into deep trenches, to form, as it is supposed, the foundations for roads and walks, while at the same time they, instead of supporting them, secure the most effectual means of making them unstable and rotten. Let a dry surface be obtained—if not naturally, artificially—and cover it with a thin coat of such material as will keep it so.

In the present depressed state of the agricultural interest, this may be worth the consideration of such of our friends of that class as purpose making roads; because, the principle admitted, must cause a much less quantity of ponderous materials to be procured and hauled than is usually done in forming farm-roads; and as economy is the order of the day, this is one item in which a saving of outlay may be made where such labor is necessary. Whether it be in an approach road to the residence of a gentleman, or upon his farm, or in his garden, nothing is more satisfactory than well-kept roads and walks. In the wilder scenes of nature we can admire rugged and irregular paths, but in what immediately relates to the comfort and enjoyment of the family of the man of wealth and taste, we look for perfection, as far as it is attainable by human means.—*Henry Baily, Nuneham.—Gardener's Chronicle.*

CURE FOR A BELLOWSED HORSE.

Some few weeks since, being overtaken by a severe thunder-storm on my way home, I took refuge under a shelter where were assembled several gentlemen, from the same cause. One of the gentlemen, a stranger to me at the time, thus accosted me:

"Why do you not cure your horse of the bellows?"

"For the very reason that I cannot," I replied.

"Well, stranger," said he, "when I am at home I cure all such cases, and warrant them, at $10 a head; but as I am a long way from home, and your horse is a valuable one, I will tell you how to cure him effectually in a few days. In the first place," says he, "give your horse salt in his water, for three mornings in succession; after that, pound up a piece of blue-stone about the size of a chinquapin, and mix with wet meal; give him the same quantity for ten consecutive mornings, feeding him rather lightly for ten days, and if he is not a well horse at the end of ten days, I'll give you my head."

I have tried the remedy, and it has wrought a perfect cure, and now give it to the readers, that they may save their horses and their ten dollars too.—*Exchange Paper.*

HOW TO SUBDUE A VICIOUS HORSE.

A correspondent of the *New-York Commercial* gives the following account of the method adopted by an officer of the United States service, lately returned from Mexico, to subdue a horse who would not allow his feet to be handled for the purpose of shoeing:

He took a cord about the size of a common bed-cord, put it in the mouth of the horse like a bit, and tied it tightly on the top of the animal's head, passing his left ear under the string, not painfully tight, but tight enough to keep the ear down, and the cord in its place. This done, he patted the horse gently on the side of the head, and commanded him to follow, and instantly the horse obeyed, perfectly subdued, and as gentle as a well-trained dog; suffering his feet to be lifted with entire impunity, and acting in all respects like an old stager. The simple string thus tied made him at once as docile and obedient as any one could desire. The gentleman who thus furnished this exceedingly simple means of subduing a very dangerous propensity, intimated that it is practised in Mexico and South America in the management of wild horses.

NEW BOOKS.

The American Miller and Millwright's Assistant. By WILLIAM CARTER HUGHES. Philadelphia: Henry Carey Baird, successor to E. L. Carey. Pp. 220.

This is another volume of Mr. Baird's Practical Series, and one that we should think is much needed, as there is no recent American book on the subject. Here the Millwright and the Flour Factor will find much valuable information, illustrated by engravings, and all at a low price.

The Turner's Companion; containing Instructions in all the various Operations in Turning. Pp. 135. Philadelphia: Henry Carey Baird, successor to E. L. Carey.

Here is another of the same series. The art of Turning is a beautiful one, and the little volume is well worth a perusal, not only by the practical turner, but by all who, either from amusement or otherwise, take an interest in the subject. Illustrated with many engravings.

The Manufacture of Steel; containing the Practice and Principles of working and making Steel. By FREDERICK OVERMAN, author of the "Manufacture of Iron," &c. &c. Philadelphia: A. Hart, late Carey & Hart. Pp. 226.

Useful books seem the order of the day. Here is another capital volume. Books on the manufacture of iron and steel have been much wanted in this country, and heretofore there has been nothing but expensive English books to supply the want. We are glad to see that publishers are turning their attention that way. We do not doubt, from the reputation of the author, that this is a capital book.

Wild Sports of the West. By WILLIAM H. MAXWELL. Philadelphia: T. B. Peterson. Price fifty cents.

The author of "Brien O'Linn" and "Hector O'Halloran" has here given us another of his capital books. Running over with humor, but at the same time chaste, it is just the book to keep off the "blues."

The Banker's Wife; or, Like Father, like Son. By T. S. ARTHUR. Philadelphia: T. B. Peterson. Price twenty-five cents.

The name of the author is sufficient recommendation for this book.

FATTENING CATTLE.

A DISSERTATION ON THE PHILOSOPHY OF FATTENING CATTLE....PART I.

NEXT to understanding properly the chemical analysis of soils, the application of proper manures, and the crops which should be grown from the land by proper tillage, there are but few subjects more deserving the attention of the practical agriculturist than a knowledge of the proper connection which exists and should be duly preserved between the members of the animal and vegetable kingdoms. As I observed in my Lectures on the "Philosophy of Agriculture," so may I now repeat, man is an omnivorous animal—he is destined by the Almighty, who has so created his masticatory and digestive organs, that he can live and flourish under a compound diet of animal and vegetable food; we are also told, by Divine authority, that "*man shall not live upon bread alone;*" consequently, as it is necessary that he should have recourse to substances of a different nature to use in combination, so is it equally of paramount importance that he should direct his care, skill, knowledge and attention to the management of cattle, so that they should be able to afford him the greatest possible amount of nutritious food, and at the least possible expense in money to himself, and waste or loss, or both, in the preparation of the same.

It is my intention in the present Lecture to make a few observations on this subject, to show you the wisdom that experience has taught us, and which I have drawn from many sources, the results of the labors of practical men. To some I may have the pleasure of addressing, the theme I shall discuss may be novel; while I doubt not that many who are here present will be able to confirm many of the truths which I shall utter.

The existing link between animals and vegetables forms one of the most beautiful chains in Nature, and one which cannot be dissolved; it is one of the greatest value to the practical farmer, because it so materially affects his operations in the breeding, rearing and feeding his cattle.

In considering this subject philosophically, we must first of all examine what are the substances which enter into the office of nutrition, and ascertain by what means, as far as our limited knowledge extends, nourishment is afforded to the animal. The vegetables upon which not only cattle but ourselves are fed consist of two portions, viz. an organic and an inorganic; and, upon instituting a chemical analysis, we find that the organic is chiefly composed of a considerable quantity of water, much carbonic acid in combination with the salts of ammonia, and nitric acid; the inorganic portion is entirely derived from the soil from which they grow, and the science of Chemistry informs us that it consists almost entirely of the various saline constituents, and earthy particles, which, upon incineration or burning, constitute the ashes of the plants. I refer you to what I stated in my Lectures on the Philosophy of Agriculture, as to the manner in which these particles are absorbed by the plants, and which you will find published in Nos. I. and II. of "THE PLOW," detailed at length; but I may here briefly remark that these substances are taken into the texture of the vegetable by means of the leaves and roots, which, under the chemical action and influence of the light from the sun, are decomposed—the oxygen becoming returned to the atmosphere which originally gave it; while the elements of water, with the carbon, unite to form starch, sugar, gum, or woody fibre, and with the elements of ammonia or nitric acid, constituting albumen, casein, or gluten. Thus, the plant derives its food almost entirely from the inorganic kingdom, while the animal, on the contrary, from its anatomical conformation, can only exist upon organic matter.

During the present century, such great discoveries have been made in the science of Organic Chemistry, particularly by the discoveries of the late Sir Humphry Davy, Dr. Edward Turner, Professor Braude, Drs. Faraday and Gregory, and last, though not the least, that of Baron Justus Liebig, of Giesson—to which may be added the labors of a rising young chemist, Dr. Lyon Playfair—that much valuable knowledge has been imparted to the philosophical and agricultural world, upon the physiology of animal life, and the manner by which the system is nourished and supported.

We now, therefore, can well comprehend why one species of diet is found to possess a greater quantity of nourishment than another—why the inhabitant of the frozen regions of the North, as I have seen in the persons of the Esquimaux and Greenlander, should require great quantities of train-oil with his daily food. And why? His stomach will digest the rancid flesh and blubber from their whales and seals, while the same species would not only be disgusting to us, but actually prove both physically and mentally injurious to the inhabitants of more congenial and warmer climates. We also understand from the same source how it is that we cannot feed animals or exist ourselves upon a diet wholly composed of sugar, starch, gum, or gelatine; and yet, although we cannot live upon any one of these substances, yet when they are all

properly combined, strange as it may appear to some, it is of all these materials, when properly united, that our daily food is composed. The great office of Chemistry, as applied to this department of human knowledge, is to point out the peculiar wants of animal bodies, and how these are duly supplied in the food we and they daily consume. Anatomy informs us that, like the vegetable, an animal body is composed of two portions: the organic particles form a considerable portion of the flesh or softer tissues of the body; and also an inorganic portion, which Professor Berzelius, of Stockholm, Guy Lussac, Vauquelin, Thenard, and Fourcroy, with Dr. Magendie, of Paris, and other experimental chemists, have demonstrated also to constitute a small portion of the softer parts; but it is in the bones, which constitute the skeleton, that they are principally found; and these are directly derived in the *herbivora* (or vegetable-feeding animals) from the vegetable diet upon which they subsist, while the *carnivora* (or flesh-eating tribes) obtain it indirectly from the blood and flesh of the herbivorous animals upon which they prey.

These remarks naturally lead us to a proper consideration of those substances which form chiefly the food of those animals which are bred, reared and supported by the former, either for agricultural labor or as food for man, and in many cases for both—strange to say, they are principally herbivorous in their nature. Examine chemically, therefore, any article which they consume—no matter whether it is wheat, beans, peas, cabbage, carrots or turnips—we shall soon find that, besides water, it has gum, sugar, starch, and a considerable quantity of woody fibre, in union with a small portion of a fatty matter; all these constituents, as I observed in my former Lectures, will be found to be composed only of three elements, viz oxygen. carbon and hydrogen, which exist combined in nearly the same proportions. But we likewise find that there are many other substances contained in vegetables which contain nitrogen, and this is in addition to those elements which compose starch, gum, &c., and are known to the chemist by the appellations of gluten, vegetable albumen, and casein. Now if we take a small quantity of fine wheaten flour, and mix it with water into a paste, and well wash it upon a sieve, by pouring a stream of cold water over it while it is kneaded with the hand, all the sugar, starch and gum will pass away through the sieve with the water, and the substance left behind will resemble bird-lime, being of an equally tenacious nature: this is, therefore, the gluten which the wheat contained; and when dried, the water it possessed being evaporated, it resembles horn, being a hard, brittle mass, and if burnt it emits a similar unpleasant effluvia to burnt horn, feathers, or other animal matter. The gluten which is obtained from peas, beans, or the fibrin and vegetable albumen procured from the expressed juices of the carrot, turnip or cabbage, all possess analogous properties to those found in wheat, with this exception, that they are all soluble in cold water, whereas the gluten which is obtained from wheat is not. If we submit these substances to the test of chemical analysis, we speedily discover them to be all composed of the same constituents, and also that they are likewise identically the same as those composing the flesh and blood of animals generally; but you must please to bear in mind that this remarkable identity does not consist in their containing azote or nitrogen in combination with oxygen, carbon and hydrogen, in the same or nearly the same proportions as in animal flesh and blood, but it extends to the existence of a small quantity of sulphur and phosphorus, which is found to be associated with the muscular flesh forming one of the soft tissues of the animal. Hence we may very properly assert, as a physiological axiom, that the blood and flesh are, by the Great Author of Nature, found actually ready prepared and elaborated in the vegetable. The plant it is which elaborates and duly prepares all the elements of water, carbonic acid, and ammonia, which constituent particles are found to be identically the same as the muscular animal flesh: consequently, the animal has nothing more to do than to apply them to his own use for the purposes of nutrition, secretion, and the vivification of life.

The following Table, adopted by my talented friend, Professor Gyde, of Painswick, will give the reader an idea of the actual identity of composition existing between these substances:

TABLE I.

Elements.	Gluten from Flour.	Casein from Peas.	Ox Blood.	Ox Flesh.
Oxygen,	22·4	23·0	22·2	22·3
Hydrogen	7·5	7·2	7·5	7·5
Carbon,	54·2	54·1	54·3	54·1
Nitrogen,	15·9	15·9	15·8	15·7

Every animal body momently undergoes some physiological change; every motion, thought and action is of course performed at the expense of some, and many of almost every part of the body; these incessant alterations and action cause the great demand for food, which Nature constantly requires to repair the waste that is continually taking place. You may speedily ascertain the truth of this fact, by noticing its illustration in those animals who have long been kept without food, or had but a scanty supply, or where it did not possess sufficient nutritious properties; and also in those animals who have undergone great exertion and bodily fatigue, when contrasted with those but little fatigued, and whose food was good in quality and sufficient in quantity. The fine horses formerly attached to our well-appointed coaches, before the construction of railroads and the employment of giant steam-power, and which vehicles will ere long only be remembered by being recorded in the pages of history among

the phenomena that have been and are passed away—the fine horses I have named were almost exclusively fed upon oats and beans, which are two of the most nutritious kinds of all species of vegetable food; while, on the other hand, those horses performing but a small amount of laborious work, will supply the natural waste of their bodies from the very small comparative quantity of gluten which is found to be contained in hay or clover, or both.

I have already informed you that the food of classes of animals consists of two kinds of distinct species of matter; viz. the one which possesses a great proportion of azote, or nitrogen, as one of its principal constituents, and which the Table I have referred to tells us is identical with the blood and muscular flesh of the animal: the other portion is destitute of nitrogen, but consists of gum, starch, sugar and woody fibre. Now, every one of these different materials answers two quite distinct but very important purposes in the economy of every animal body. The first, or the nitrogenous constituents, supply the waste which has occurred in the fluids and tissues of the body, and, as Dr. Magendie very properly states, may justly be termed the elements of nutrition; the last, which are the non-nitrogenous portion, act, if I may apply the expression, as fuel for combustion in the lungs, in order to keep up the due supply of animal heat, and under some peculiar circumstances also will contribute to the formation of fat.—These elements may likewise be arranged under two great heads, viz. those which are necessary to the function of nutrition, and those affecting that of respiration.

I respectfully call your attention to the following Table, wherein they are exemplified:

TABLE II.

1. Elements of Nutrition.	2. Elements of Respiration.
Gluten.	Gum.
Albumen.	Starch.
Casein.	Sugar.
Flesh, or Muscular Fibre.	Oil or Fat.
Blood.	Alcohol.

The elements of nutrition (No. 1) must of necessity exist in combination with every substance which experience has taught us to be capable of supplying food to the animal; but, ere it can impart the nutritious properties, numerous important mechanical and chemical changes must undergo, ere it can take place. The grand process of digestion must be performed—by which I mean, the manner by which the nutritient particles may be rendered soluble, and not only capable of entering, but even of forming new blood. A brief detail of the manner in which this is performed may not be uninteresting to some of my present auditory. It is accomplished in the following manner: The food, when received into the mouth, is broken down by the teeth, where it becomes mixed with the saliva, which is secreted by the glands that are situated near the angle of the jaw, and beneath the tongue; when the process of mastication is completed, the morsel is collected into a ball at the base of the tongue, and by the act of deglutition or swallowing it is carried past the pharynx into the œsophagus or gullet, down which it passes into the stomach, where it enters at the cardiac orifice; it remains there for a short time, according to the nature both of the animal and the food it has partaken of, (in man it is supposed to be about two hours.) The chemical and mechanical action that now takes place is technically called, in physiological language, the process of *chymification;* when this is perfected, the orifice at the opposite extremity (denominated the pylorus) becomes dilated, and the chyme passes into the first of the small intestines, anatomically named the *duodenum*, where it becomes mixed with the bile from the liver, and the fluid from the *pancreas* or sweat-bread This being accomplished, the process of *chylification* now commences—a series of small, minute vessels, named lacteals, whose mouths open on the mucous (or villous) coat of the bowel or intestine, which absorbs the nutritious portion of the food, (which resembles milk in appearance, hence it is named *chyle.*) This fluid, being conducted by numerous branches, passes into one great reservoir, called the *thoracic duct*, which ends in a large vein near the heart (the left subclavian), and there it is mixed with the blood; but being loaded with carbon, which is inimical to the due preservation of animal life, the blood passes from the heart to the lungs, where it becomes oxygenized, and fit for all the purposes of the animal economy. The non-nutritious portion, from which the chyle has been extracted, passes through the last of the small intestines *(the jejunum)* into the whole course of the larger part of the alimentary canal—viz. the *cæcum*, *colon* and *rectum*, and from the last they are finally ejected from the body—ultimately again to reënter it in another form, in consequence of its forming manure, and therefore affording food for plants in the manner detailed in my former Lectures.

But independent of the simple fact that the salivary fluid, when commixed with the food, renders the digestion of the aliment far more easy, yet Baron Liebig imagines that it possesses the peculiar offices of inclosing and combining air, in the form of froth; the oxygen which it contains enters into union with the constituents of the food, while the nitrogen is again evolved through the medium of the lungs and skin; this philosopher is likewise of opinion that, in many of the herbivorous quadrupeds, their rumination (as the oxen and sheep, for example) has for one of its principal objects a complete renewal with the repeated introduction of pure oxygen into the animal's stomach; and that, unless this takes place, the function of rumination cannot be duly perfected in the stomach. I have given you a brief outline of the manner in which digestion is accomplished, but in doing so I omitted to observe that attached to the mu-

cous or villous coat of the stomach are a series of minute glands, which secrete what is denominated the *gastric juice* or *fluid*, and which, among other matters, contains a quantity of pure *mucus*, in combination with a small quantity of *free hydrochloric* or *muriatic acid* (called in common language *spirits of salts*), with a peculiar principle known to chemists under the appellation of *pepsin*, and which has been affirmed by Dr. Sylvester, of Clapham, to be in itself a most active and virulent poison, but whose noxious properties are chemically neutralized in the stomach and intestines during the function of digestion.

I have stated that *hydrochloric acid* is always present in the stomach, and particularly so during the digestive process: for the discovery of this curious but important chemical fact, we are indebted equally to M. Tiedmann Gmelin (of Germany) and Dr. Prout, of London. This acid may be artificially obtained by the decomposition of chloride of sodium, or *common table salt* (which is only a combination of pure muriatic acid and soda); the acid is of great service in promoting the function of digestion in the stomach, while the soda, as an alkali, copiously enters into the formation of bile. Thus it is that a certain proportion of salt is necessary to digestion in every species of animals, at least as far as our knowledge extends in the classes of quadrupeds and birds; and, although Chemistry tells us that it is an essential ingredient in the burnt ashes of all vegetables, yet we very rarely find it existing in a sufficient quantity to form a regular supply of either the acid or soda which is required for the due performance of the function of healthy digestion; and, therefore, not only should we ourselves partake of a certain quantity daily with our own food, but should place some within the reach of both birds and cattle under our management in the farms we are connected with. Nature is the philosopher's best monitor, and the scientific farmer cannot do better than obey her axioms. We find that all classes of animals have, if I may use the expression, an instinctive love for salt, and seek for it as for a portion of their diurnal food. It is well known that the pigeon tribe of birds, if they cannot obtain it elsewhere, will even have recourse to the mortar which cements the bricks of houses together; they have been frequently known to fly to the sea-coast in order to procure it; and pigeon-fanciers who are not so honest as to mind *borrowing* their neighbors' birds, will allure them by means of what is known as a *salt cake*, placed in or near the dove-cote, wherein muriate of soda forms an essential ingredient; this nefarious practice is now forbidden, very properly, by an act of Parliament, which awards a punishment of seven years' transportation upon conviction; it however confirms the important physiological fact I have just noticed.

In the ruminating tribe of the class *Mammalia*, as the ox and the sheep, the important process of digestion differs but little from that which I have stated, and whose stomachs are of the simplest construction, being little else than a mere membraneous bag; but in the *Ruminantia*, we find their stomachs considerably more complicated, in order that they may be enabled to extract the due proportion of nourishment which they require from the food which they eat; as in the case of grass, by way of example, which we find by chemical investigation contains but very little nourishment in proportion to the bulk. Let us now philosophize for a moment, and see the manner in which the ox and those of his class perform the functions of mastication and digestion. In these creatures, the grass is cropped from the surface of the earth by means of the fore-teeth, and after being but very slightly masticated, is swallowed; this process continues until the first stomach is filled,* when the animal lies down apparently well and perfectly contented; but it is now that the curious process of rumination commences. In the first stomach, the food is mixed with a secreted fluid not dissimilar to the saliva, and in a kind of semi-pulpy mass it is returned into the mouth, in small detached portions, where perfect mastication takes place, and during this process the animal is in a recumbent position; after the second and perfect mastication is completed, the food passes into the second stomach, denominated by comparative anatomists *omasum;* from this it passes into the third stomach, the *abomasum;* in these last two, it undergoes very important changes, and whence it passes into the fourth or really true stomach. It is in this last portion of the curious but complicated species of apparatus, that the function of digestion is ultimately and perfectly performed; and the last processes of extracting the nutriment from the food are exactly similar to that which I have described as occurring in man and those animals having simple membraneous stomachs. The vital fluid of all animals is commonly denominated the blood, in which, as Holy Writ truly observes, "*is life;*" this fluid is either formed from vegetables, as in the *Herbivora*, or from flesh, as in the *Carnivora;* yet in both tribes of animals the composition and essential constituents are the same, both in their physical effects upon the system, and as portrayed by chemical analysis. We find it circulating throughout not only the principal organs in the living animal, but by means of vessels as fine as the human hair: so extremely delicate are they that they will not admit the thicker coloring particles of the blood itself; yet the properties which the blood possesses are most surprising; it replenishes the fluids and solids which are diminished by the waste, wear and tear of the body; it places osseous or bony matter in the skeleton for its growth and support;

* We should here observe that the Lecturer exhibited drawings of the stomach, as found in both tribes of animals.

forms fleshy fibres for soft muscular tissue, by which the motions of the body are performed; and from the blood are all the different bodily secretions which are necessary for the healthy existence of the animal secreted and performed; the blood supplies carbon to the lungs for keeping up the animal heat, with fat and oily fluids deposited in the softer tissues as well as in the very substances of the bones themselves, as a store from which Nature can extract a due supply when necessity compels her; lastly, the blood is the true moving power by which the whole animal machine is put into motion, just as steam is to the steam-engine, and coals as fuel to the fire.

As far as I have proceeded I have only spoken of that part of the food from which animal flesh is naturally formed; *i. e.*, the gluten extracted from the vegetable, the albumen, and the casein: my self-imposed task, however, is not yet complete. I have now to take into consideration the offices which are fulfilled by the sugar, starch, gum, oil or fat, which we find, by examination, constitute so large a proportion of the food of man, and the principal of the lower orders of animals. Now, we find from observation, that every animal has a temperature above that of the surrounding atmosphere; and physiologists have denominated it the animal heat, which, in those animals domesticated by man, are found to be, on an average, about 100° of Fahrenheit's thermometer—in man it is about 97°, and we find that it continues much the same under every kind of circumstance, whether we live beneath a tropical sun, a more temperate region, or the frozen climes of the North.

The animal heat originates in the body; it is created by the chemical combination, or, if I may employ the term, the combustion of the elements which enter into the formation of starch, with the other non-nitrogenous constituent particles of the food, united with the oxygen of the air, which is received into the lungs during the function of inspiration; and likewise by a portion that is absorbed through the skin.

Upon examining the atmospheric air which we breathe, we find, upon submitting it to a chemical analysis, that it is composed of twenty-one parts of oxygen and seventy-nine parts of nitrogen, with so small a quantity of carbonic acid gas that its amount cannot be calculated in a given quantity of air; yet of course an immense proportion must exist, for it is supposed that the atmosphere extends forty-five miles at least in hight, and presses at the ratio of 15 lbs. upon every square inch: this was discovered by Torricelli and Galileo in the 17th century. However, when the air we have inspired has been expelled from the body, we find that it has undergone but little if any change; the oxygen, however, has disappeared, and been replaced by an equable quantity of carbonic acid gas, with a small quantity of aqueous vapor: the proportion of animal heat which attends this chemical change, is consequent upon the amount of carbon and hydrogen which is consumed. The heat which is thus produced is occasioned by exactly the same chemical action as that which causes the combustion of wood in a stove, or the fat of a lamp or candle, and the products of which are exactly the same: the carbon and the hydrogen of the food combine with the oxygen that is supplied by the atmosphere, and heat is generated in the body in proportion to the quantity which is consumed. In the stove or lamp the same changes take place, the fuel being composed of similar elements entering into the composition of the food; and the results of the combustion are precisely the same, the combination being less energetic in the body than in the stove or lamp.

Now, how is it in man? In a full-grown adult, if we take the weight of the carbon which is disengaged in the excretions, from the weight of the carbon contained in the food that is consumed during the twenty-four hours, we shall soon find that the remainder will amount to somewhere about fourteen ounces, and this is assimilated with the component parts of the body; the weight of which, however, does not increase, for it is a well known philosophical axiom, that fourteen ounces of carbon will require thirty-seven ounces of oxygen* for its transformation into carbonic acid, which passes off from the lungs and skin. Thus, in this simple manner, we can easily comprehend how it is that the enormous quantity of oxygen which is introduced into the animal body by the progress of inspiration, and the great proportion of carbon which is derived from the food consumed, are removed from the body; and likewise, how it is that the food required for supporting the animal in its normal condition is in exact proportion to the quantity of oxygen that is absorbed. Now, we find that a horse consumes daily, in his food, upon an average, eighty-nine ounces of pure carbon, and a cow seventy ounces; the former requires 212½ ounces, the latter 186½ ounces of oxygen, in order to transform the consumed carbon into carbonic acid. I have already stated that, in addition to the constituents which I have named, the vegetable is found upon chemical analysis to contain a small quantity of fatty matter in addition to the earthy and saline substances of which it is composed. The question is now to be answered, What are the purposes which they answer in the animal economy? Every animal that is in a state of sound health has a layer of fat, which is situated between the skin and the muscles, and likewise between the muscles themselves, by which means they have great freedom of motion. Fat is also deposited in the body of the animal, particularly in the neighborhood of the bowels, also attached to a portion of them, and enveloping the kidneys, (where it

* One ounce of oxygen equals 1416·5 cubic inches

is vulgarly called by butchers the suet). In the *Carnivora* or flesh-eating animals, the fat which is contained in the food they eat, is consumed in the lungs for the purpose of preserving the proper quantity of animal heat, and consequently, in these creatures, we but very rarely find the body of the carnivorous animal to contain much fat. M. Darwin, in his Journal of Researches into the Natural History of the Countries visited during the voyage of the Beagle, informs us that the Gauchos, or simple countrymen in the Pampas, South America, lived for months together upon flesh, but he observed that they ate large quantities of fat; and Dr. Richardson, in speaking of these people, has also remarked "that, when they have fed for a long time solely upon lean animal food, the desire for fat becomes so insatiable that they can consume a large quantity of unmixed and even oily fat, without nausea." This instinctive desire for fat in man and animals living on flesh arises from the imperative demands which are daily made upon the body for carbon to keep up the proper amount of animal heat, and which is contained in the fat that is consumed as an article of diet.

Thus far in the omnivorous and carnivorous animals; but in the herbivorous creatures it is widely different. The supply to the lungs is derived from the starch, sugar and gum in the vegetable, while the fat which exists in the food is in a great measure laid up as fat in the animal body; therefore it is that we find the bodies of the herbivorous quadrupeds generally much fatter than the *Carnivora*. But if the supply of the starch in the food is inadequate to the demands of respiration, then the elements of the fat become consumed in the lungs, exactly as it is in the carnivorous animal; the sugar, gum, and starch become speedily transformed into aqueous vapor and carbonic acid in the animal system: these are the first consumed; and, if this supply proves to be inadequate for the purpose required, then the fat, next the fat of the animal body, and finally the tissues themselves, are placed under contribution, the animal becoming thin, feeble, and emaciated, and ultimately dying from starvation.

['The (London) Plow.']

CARROTS *versus* OATS.—We have had twenty communications from various sources, all of which concur in saying that a peck of carrots will, with the same quantity of hay, keep working-horses in as good condition, and many say better, than a peck of oats and a like quantity of hay; or that a peck of carrots and a peck of oats are equal to half a bushel of oats. 60 bushels of oats and 900 of carrots per acre are large crops.

Say to raise carrots you plow your land once oftener than for oats, at a high allowance for man and team	$2 50
Say it takes 12 days' labor to hoe the acre three times, and 4 days' labor to dry the crop—16 days at 75 cents per day	12 00
Say additional manure for carrots, which, however, leaves the land the richer	10 50
Total	$25 00
Say, then, you raise only 500 bushels of carrots per acre, at 35 cents per bushel	$175
Deduct extra cost of cultivation	25
Produce of one acre of carrots	$150 00
Say you raise 40 bushels of oats per acre, place the seed of the two as equal, and that the straw of the oats pays for reaping and threshing, and you have 35 cents per bushel	14 00
	$136 00

clear gain, if you feed your carrots to your horses or cows.

Then strike off half again, and reduce your crop of carrots to 250 bushels, and still you have $68 against $14.

COURSE OF LECTURES ON BOTANY IN REFERENCE TO AGRICULTURE.

By Charles Johnson, Esq., *Professor of Botany at Guy's Hospital, &c. &c. At Messrs. Nesbit's Agricultural and Scientific Training School, Kennington Lane, Lambeth, near London.*

INTRODUCTORY LECTURE.

We commence this day a series of Lectures on Botany, not as an abstract science, but as one intimately connected with various branches of human economy, and more especially with that which, as it ever has been, so it must continue to be, of the utmost importance to mankind, viz., *the cultivation of the earth, the prime source of our civilization and of almost every art that ministers to the elevation and improvement of Society.* Itself an art of the highest antiquity, Agriculture must al-

ways have been one of progression; more or less simple in its practice at the first, observation and experience season after season suggesting new plans of operation, new means of improving or maintaining the fertility of the soil, and of guarding against those casualties that in every country and climate affect the productiveness of the crop. The success —sometimes, perhaps, rather fancied than real—of one experiment led to the institution of others, and thus the pursuits of the husbandman, originally followed without rule, and precarious in their results, were by degrees brought to a state of perfection and fixity of purpose that elevated the art to the science, the mere laborer to the philosopher. Such has been its progress in all ages among all nations. But to advance beyond a certain point, the cultivator of the earth must extend his sphere of information, must seek the aid of other sciences, possibly of those which, from imperfect acquaintance with their objects, he has hitherto regarded as completely isolated from his own. So mutually dependent are the laws and operations of Nature upon each other, such her unity of action, that to confine ourselves to any branch of knowledge abstractedly is folly, willful blindness: learn all you can, and you will not keep it seven years without turning it to some useful purpose. We are advancing in our estimation of these things daily; and you whom I now address will stride, I trust, not one, but many steps, beyond your fathers in the great work of improvement, whatever may be the duties of your after life. A high-class farmer of the past generation would have ridiculed the idea of his son and intended successor being taught at school the rudiments of chemistry and natural philosophy: they might, indeed, be very useful to a manufacturer, but quite superfluous in his case. As to Botany, he would regard it as downright nonsense. Not thirty years back, I knew a gentleman, residing in one of the best cultivated districts in England, who had the reputation among his poorer neighbors and dependents of dabbling in magic, and among those of his own grade, even the best informed, was looked upon with a sort of pity as a monomaniac—simply because, being a man of some scientific acquirements, he was laboring by rational means to enhance the value of his own property, and suggest improvements to those around him; had written a book on the natural history of his native county, employed his leisure from other pursuits in analyzing, in a small, well-furnished laboratory, the subsoil of his own and his neighbors' fields; occasionally cultivated patches of all sorts of weeds, exotic and British grasses, &c., with a view to the best means of exterminating the former and ascertaining the value of the latter, in a plot of ground set apart for the purpose; and, more wonderful than all, sought to discourage poaching by turning away his gamekeeper and neglecting his preserves. The prejudices against new methods of cultivation are now quickly subsiding, in proportion to the diffusion of general knowledge; the numerous Agricultural and Horticultural Societies that have successively started into existence in this country, the increasing numbers of their members, and interesting character of their meetings, all evince that a spirit of inquiry is extending its influence among our rural population, no less than among our manufacturers and merchants, the results of which it is at present difficult to speculate upon, but the general cry is, "Forward, forward." In Great Britain every movement of the kind has been hitherto due to the energy of private individuals and the ready response of an industrious and enterprising people; but on the Continent—in France, Prussia, and most of the German States—public schools, under the auspices of the Governments, and established by them, are open for the education of youth in this important department of human economy, furnished with professors in the auxiliary branches of science, as chemistry, botany, geology, &c., and with all the essentials requisite for combining theory with practice. The advantages already derived to the States in question from these establishments have been sufficient to prove the value of the extended system of education they have afforded; and old prejudices are universally disappearing as their pupils become distributed through the Provinces, carrying with them the most unbiased views and openness to conviction which are the natural results of a liberal course of instruction.

The value of Botany, as a practical science, is not so well appreciated in this country as it is abroad; and this simply because the attention of our practical men has not been hitherto sufficiently directed to it, nay, has even been averted in consequence of the very general prejudice that it is better fitted for a plaything than a tool; a notion—I will not call it an opinion—that originated very naturally, from the superficial manner in which its study was followed in this country by most of those who aspired to rank among its votaries, even so recently as twenty years ago. It was then little more than the art of distinguishing one plant from another, of allotting to each its learned name and place in an arbitrary system of arrangement, and, sometimes, of adding to these capabilities a remembrance of the qualities of those used as food or medicine. Now, to use the words of a modern writer, one of its most able and industrious professors, "it comprehends a knowledge not only of the names and uses of plants, but of their external and internal organization, and of their anatomy and physiological phenomena; it embraces a consideration of the plan upon which those multitudes of vegetable forms that clothe the earth have been created, of the skillful combinations out of which so many various organs have emanated, of the laws that regulate the dispersion and location of species, and of the influ-

ence that climate exercises upon their development; and, lastly, from botany, as now understood in its most extensive signification, is inseparable the knowledge of the various ways in which the laws of vegetable life are applicable to the augmentation of the luxuries and comforts, or to the diminution of the wants and miseries of mankind. It is by no means, as some suppose, a science for the idle philosopher in his closet; neither is it merely an amusing accomplishment, as others appear to think; on the contrary, its field is in the midst of meadows, and gardens, and forests, on the sides of mountains, and in the depths of mines; wherever vegetation still flourishes, or wherever it attests, by its remains, the existence of a former world. It is the science that converts the useless or the noxious weed into the nutritious vegetable; which changes a barren, volcanic rock like Ascension, into a green and fertile island; and which enables the man of science, by the power it gives him of judging how far the productions of one climate are susceptible of cultivation in another, to guide the colonist in his enterprises, and to save him from those errors and losses into which all such persons unacquainted with botany are liable to fall. This science, finally, is that which teaches the physician how to discover in every region the medicines that are best adapted for the maladies that prevail in it; and which, by furnishing him with a certain clue to the knowledge of the tribes in which particular properties are or are not to be found, renders him as much at ease, alone and seemingly without resources, in a land of unknown herbs, as if he were in the midst of a magazine of drugs in some civilized country."

This department of science, which is now becoming a subject of general interest, in consequence of the new views of the economy of Nature in her development of organic being, that have been obtained by a deeper insight into vegetable anatomy and physiology, cannot but be more especially valuable to those whose pursuits are so intimately connected with the objects of its study, the cultivators of the soil. There may be, doubtless there are still, many such as those of which we have previously spoken as existing thirty years ago, who in the pride of their ignorance, may laugh at and despise the lessons of the theorist as opposed to old practices, the result of the experience that has been handed down from their forefathers; until wakened to slow conviction of their importance by the success of their more enterprising neighbors, and then deplore the time they have lost, and which others have occupied in the steady progress to improvement. The views of the merely scientific man may often, it is true, be only speculative; they may sometimes be in direct opposition to facts, of which he has himself no direct means of becoming acquainted. But who is to test the value of his experiments, unless the man of practice? He alone, in his broader field of inquiry, is competent to detect in their action the errors in minutiæ that have escaped the notice of the chemist in his laboratory, and the naturalist in his closet; he chiefly is to derive the benefits accruing from their united labors; and a knowledge of the leading principles of their science and of natural philosophy in the aggregate will materially assist, nay, is absolutely necessary to qualify him for both the trial and the benefit. It is surprising that the very evident advantages to cultivation that an acquaintance with the structure and vital function of vegetables promises, should have hitherto been so little estimated by the agriculturist: the practical gardener has far anticipated him in the pursuit of inquiries equally essential to them both; although, perhaps, himself in the main, still very distant from acquaintance with a vast body of facts that might be rendered available by his skill. How much, for instance, has a knowledge of the organs and attributes of the flower contributed to the advancement of his art? Let us look at a flower: it is really a complicated object; much more so than many who have long admired and cherished it for its beauty and fragrance have any idea of; or, if they have, have not thought worthy of examination. Its greatest beauty consists not in the gorgeous color, nor its value in the most exquisite odor, but in the admirable adaptation of its parts, and their subservience to the reproduction of its kind.

Take any common flower of the field or garden, only observing that, if one of the latter locality, it is not of the kind called "double," which, however admirable as garden ornaments—and not altogether to be despised by the botanist, on account of the illustrations they afford him of the morbid development of parts to which the individuals of the vegetable kingdom are liable under peculiar circumstances—are not at all calculated to display the unity of design that constitutes the chief object of interest in a perfect flower. Externally, investing the base of the flower, is a series of small leaves, usually of a green color, and from three to five in number, separate, and spreading, as in the buttercup and the peony, or conducted into the form of a cup or vase, as in the primrose or pink: this is the *calyx*, or flower-cup; it covers the rest of the flower in the state of bud, and serves to support and hold together the more delicate internal organs when expanded. Within the calyx is the *corolla* or blossom, composed of leaves, generally of the same number as those of the calyx, which are either white or variously colored, and called *petals;* these are either distinct, as in the rose and the wall-flower, or connected, as in the fox-glove and potato-flower. Within the corolla are the *stamens,* generally thread or wire-like processes, with yellow, or, occasionally, purplish or reddish tips; these are very variable in their size, length and number, in the flowers of different plants; some flowers have only one or two stamens—in the

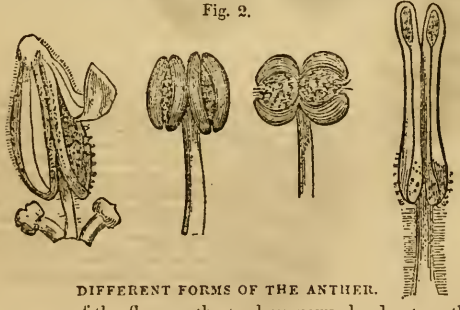
bell-flower there are five, in the tulip six—and in some others they are too numerous to be counted. The stamens surround the *pistil*—so called from the Latin word *pistillum*, a *little pillar* or *column*, or, by a more homely interpretation, a *pestle*: look at the pistil in the flower of the lily; at the lower extremity, where attached to the flower, is a thickish, green body, called the *germen*, or *ovary*, from containing the rudiments of the seeds; the long, wire-like part in which this terminates is called the *style*, and the knob at the extremity of the style is named the *stigma*. Look at the pistil of the tulip; in that the germen is long and three-sided, bearing the curiously three-parted stigma on its summit, and the style is wanting. The pistil is not always solitary; in many flowers there are two, three, or more together; and they are frequently very numerous, as in the common buttercup, where the many little green, pointed grains in the center of the flower are so many pistils. See fig. 1: *a* the calyx; *b* the corolla; *c* the stamens; *d* the pistils.

Fig. 1.

STRUCTURE OF FLOWERS.

In most of the higher orders of plants, all of these parts are present in the perfect flower; and sometimes other appendages, of which we may speak hereafter; but in some there is no corolla, in others neither corolla nor calyx, and in many the stamens and pistils occupy distinct flowers—all very important characters in distinguishing one family of plants from another, and especially deserving of the attention of the cultivator.

Fig. 2.



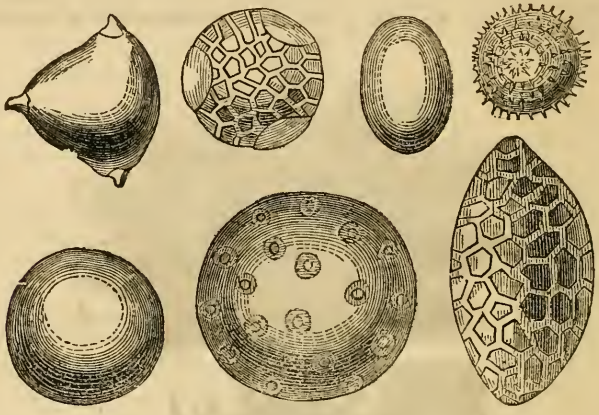
DIFFERENT FORMS OF THE ANTHER.

Of all the parts or organs of the flower, the stamens and pistils are the most essential. The stamen is a very curious body: the lower part, called the *filament*, from its resemblance when very slender to a thread of hair, is frequently absent, the colored tip being attached to the corolla or some other part of the flower; this tip, denominated the *anther*, is a little

case or box, usually double, opening at a certain period on each side, and scattering an exceedingly fine powder, called the *pollen*. The forms of the anther are various, and likewise the modes of opening. (See figure 2.) Thus sometimes, and indeed most frequently, the opening is by a longitudinal slit the whole length of the anther; in many instances it is a small pore or perforation at the extremity, and in others it takes place by a little door or valve turning upward, as shown in our figures.

The grains of pollen are very beautiful objects for the microscope, under which they present a great diversity in size, form, and structure. (See fig. 3.)

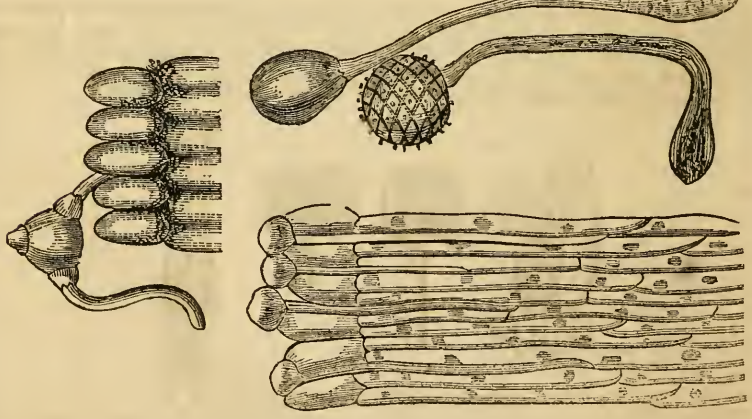
Fig. 3.



GRAINS OF POLLEN MAGNIFIED.

The pollen is an agent of vast importance in the economy of the vegetable kingdom; the maturity of fruit and the production of seed being dependent upon the contact of these minute bodies with the stigma or summit of the pistil. About the period at which the anthers burst and scatter the pollen, the surface of the stigma is seen to be moistened by a viscid secretion, that, occasioning the adherence of such grains as light upon it at the moment of dispersion, so acts likewise upon them as to stimulate the ejection of one or more slender tubes from the surface of each individually; which tubes extending more or less according to the length of the pistil penetrate through its tissue until they reach the interior of the germen and come in contact with the embryon seeds. In the event

Fig. 4.



POLLEN TUBES.

of this contact not taking place, the seed becomes abortive; and hence in many seed-cases, as those in the common pea, we find only two or three perfect seeds, instead of nine or ten, perhaps, whose rudiments were present. The grains of pollen, examined by

a very high magnifying power, are found to consist of a membrane, inclosing a fluid, in which an infinite number of excessively minute particles are seen in active motion; these contents are eventually discharged through the tube, the grain being left empty. The figures in the 4th wood-cut are intended to illustrate this action of the pollen tubes; of the two larger ones, that with the triangular pollen represents it as taking place on the stigma of the common evening primrose; the other, the descent of the tubes through the stigma and parts of the style of the great snap-dragon or calve's snout. This curious process was unknown to naturalists until recently, though the influence of the pollen in the fertilization of the seed seems to have been understood in relation to certain plants from a period of great antiquity, especially some of those in which the stamens and pistils are produced in different flowers, and occasionally on different individuals, whose male and female attributes must have been recognized by the cultivator before success could have attended his labors. As a striking instance, we may refer to the date, the staple food of the nations of the Arab stock from time immemorial. The date tree is a kind of palm growing abundantly in the sandy and rocky districts of Persia, the adjoining Provinces of Western Asia, Arabia, Egypt, and Northern Africa, and is largely and assiduously cultivated by the inhabitants. A forest of dates is a magazine of provision for a city, and the failure of a crop spreads depopulation through whole provinces; the quantity of fruit yielded by a single tree in each season is, on the average, from two to three hundred weight; every village has its plantation, and even the splendid city of Zenobia derived its Roman name of "Palmyra," and its Arabic and scriptural appellation of "Tamor" or "Tadmor" in the desert, from the groves of dates by which it was from necessity surrounded. These plantations are, of course, chiefly of the trees with pistil or fruit-bearing flowers; but in order to insure a crop, the natives are accustomed to gather the large bunches of flowers from the male dates, about the time at which the stamens are ready to scatter their pollen, and suspend them over the others; nay, to guard against an adverse season, they lay by stores of pollen from year to year. This "marriage of the palms," as it is called in the figurative language of the East, is a festival of too early origin to be recorded even by tradition. So well is the necessity of the process understood even by the wildest of the wandering and predatory tribes, that in carrying war into the lands of their neighbors, they frequently cut down the stem-bearing dates as the most dreadful vengeance they can inflict. Some idea of the importance of the act may be gathered from the statement of Kæmpfer, that the threat only of so doing once put a stop to an intended invasion of a then very formidable power: he mentions, "I remember it happened in my time that the Grand Signior meditated an invasion of the city and territory of Bassora, which the prince of that country prevented by giving out that he would destroy all the male palm trees on the first approach of the enemy, and by that means cut off from them all supplies of food during the siege."

This principle in cultivation, so long under stood and made available in that of the date, was afterward found to be applicable in the nurture of all kinds of flowering plants. Of the experiments by which it became established beyond the reach of controversy, or of the means by which our present knowledge of the important fact has been acquired, it is unnecessary for us now to inquire; however interesting the detail, we must wave it for the consideration of the result, viz., the vast power that knowledge has placed in the hands of civilized man, to multiply and enlarge these sources of food and luxury which he derives from the vegetable kingdom, and to which the plasticity of nature seems scarcely to have assigned a limit. The almost endless varieties exhibited among our cultivated plants, whether in root, or leaf, or flower, or fruit, or seed, have all their origin in the reciprocal action of the stamen and pistils; Nature herself has contributed many, but man has far outstridden her slow progress. The bee in passing from flower to flower, carries away stores of pollen destined to form the waxen fabric of his dwelling, and deposits stray particles adhering to his wings and body upon the pistils of others of a different kind; while numerous small flies and beetles are occupied, in their search for food, in impregnating in a similar manner the seeds of one plant with the pollen belonging to another. Hence the uncertainty attending the preservation of cherished varieties of annual plants in cultivation. When the gourd known by the name of "vegetable marrow," was first introduced into this country, I received some seeds of a very fine variety brought from the Continent, and celebrated there for the large size and luscious character of the white fruit; for several years no deterioration was observable; but having sown one season some of the seeds belonging to one large "marrow" fruit reserved for the purpose, my surprise was great to find, when the plants came into bearing, no fewer than three different varieties of gourds were the produce of different individuals, all of them totally unlike the original. This apparent anomaly was afterward explained away by the fact that, while my vegetable marrow was flourishing on one side of a high wall, my neighbor had trained a pumpkin and an orange gourd on the opposite; and the reserved fruit must have had its seeds fertilized by the pollen of both of them, and of some other species or variety brought by the bees or other insects from a greater distance. These freaks—if we may so term them—of Nature are not only productive of occasional loss and disappointment to the cultivator, but even of much greater evil, as

evinced by a circumstance recorded by Ray to have taken place a short time previous to the promulgation of the discoveries of Sir Thomas Millington respecting the functions of the flower. It appears that a market-gardener of Brentford, named Richard Baal, sold a quantity of the seed of the cauliflowers at that period bearing a very high price, to a number of persons carrying on the same trade in the vicinity of the metropolis, who, having sown it in the usual way, were surprised and alarmed on finding that, instead of cauliflowers, it produced a kind or variety of cabbage then in common use, and known as the long-leaved, probably resembling some of the colewort or kales of the present day. Enraged at their loss, and attributing it to dishonesty on the part of Baal, they joined in a prosecution against him. The trial took place in Westminster Hall, where he was adjudged to be guilty of fraud, and sentenced not only to pay back the price of the seed, but to compensate the gardeners for their loss in cultivation, and the diminished value of their expected crop. Thus was poor Baal ruined both in fortune and character by the ignorance of his judges, who, had they been acquainted with the true state of the case, would in all probability have acquitted him of all fraudulent intention, attributing the mishap to the accidental impregnation of the pistils of the cauliflower by the pollen of the colewort, through the medium of insects, or wafted by the wind.

To attempt a detail of the advances made in Horticulture and Agriculture, particularly in the former, since the time of Baal, solely in consequence of our knowledge of a fact that, unknown, caused his ruin, would be an all but interminable task. The natural varieties of esculent and ornamental plants were then comparatively few: those artificially obtained since are now approaching to a number the extent of which it is impossible to foresee or calculate; their name is already "Legion." The most astonishing examples are to be found in the annals of the florists, the cultivator of geraniums, roses, heaths, and pansies. The art which has successively produced their hundreds and their thousands, differing only in the form or arrangement of a petal or the disposal of its tints, a spot or line may perhaps be regarded with contempt by those whose pursuits are directed to an end more immediately and obviously useful; but, without seeking to oppose their prejudices by tracing the necessary association between the elegant and the useful in elevating man in the scale of being, let me remind such persons that the plastic power of Nature is equally efficient in enlarging a root and seed as it is in varying the colors of a flower, and that the same means differently directed will effect both. How else the vast diversity of our home-grown fruits, almost equaling in many kinds, and in some surpassing those of our garden-flowers? The varieties of the apple alone—the most valuable of them all—amount to about two thousand; yet all of them are derived from two original species, viz., the *malus acerba*, the harsh and sour crab-tree of our forests, and the *malus mitis*, or sweet apple of a milder climate; both of which are by some botanists considered to be natural varieties of the same, though their origin cannot now be traced. These two thousand varieties, about one thousand kinds of pear, and half of the latter number of cherries and plums individually, have all originated from seed, and are indebted for their peculiarities in flavor, hue, and form or size, to the pollen with which that seed was fecundated. That which has been effected with regard to fruit and flowers is equally possible with roots and grain, as well as other vegetable products requiring cultivation on a large scale. If by crossing the breed in cattle the agility and muscular forces of the horse have been improved, adapting him to the various purposes for which his powers are required, the flesh of the ox and sheep rendered more palatable and nutritious, and the wool of the latter increased in fineness and quantity, the attributes of the plant may be called forth and rendered more subservient to the wealth of the agriculturist by similar means. The plant and the animal are both organic structures, subject to the same general laws of development and reproduction, of improvement and deterioration; and in permitting the manifestation of those laws, though only to the slight extent of our present knowledge, Nature has bestowed on man a power of forestalling, for his own immediate purposes, changes that, under her own dominion, would perhaps never take place, or but after the lapse of thousands of years.

We might pursue this subject much farther, but it would carry us beyond the ordinary limits of a lecture; and as my purpose in this, the introductory one of a course of some extent, is rather to call your attention to the science of Botany as one of practical utility, than as a mere source of amusement, if that purpose has been attained it will be sufficient for the present. In our next, some detail of the functions and organs by which vegetable life is maintained will be necessary to the understanding of those that will follow. The cultivator of plants who knows nothing of their anatomy and physiology is much in the same position as the quack who undertakes to lop off a man's limb without knowing the veins and arteries he must sever in the operation, or who prescribes a course of diet or medicine, ignorant alike of the nature of either, and of the vital energies through which he expects them to prevail. [London Farmer's Magazine

CARCASS WEIGHT OF SHEEP.

From the nature of the covering of sheep, it is only when these creatures are recently shorn of their fleece, that dimensions for ascertaining their carcass weight can be taken with accuracy; and, in so small an animal as the sheep, any inaccuracy in measurement would lead to much too great a proportional discrepancy to the true carcass weight to be of practical utility. The following observations will therefore be confined to the proportion of carcass to the weight of the animal alive.

The proportion of mutton to the live weight of sheep is somewhat, but not greatly, different to that of the carcass weight to the live weight of neat cattle. The specific gravity of mutton is less than that of beef: so far the proportion of the carcass to the live weight of sheep will be less than the proportion of the carcass to the live weight of oxen; but, when sheep are in a fat state, the thickness of their flesh, in proportion to their size, is greater than that of oxen, the difference being fully equal to compensate the less density of mutton. The offal of sheep is lighter in proportion to their live weight than that of oxen, excepting when sheep are in wool, at which time their skins proportionally exceed the hides of beasts. So that, when the greater thickness of flesh and small general offal is set off against the less density of mutton and the fleece, the analogy found to exist between the proportion of mutton to the live weight of sheep, and that of beef to the live weight of oxen, is not surprising.

From the experiments I have made, I do not find that so much depends upon *breed* in causing a variation in the proportion of mutton to the live weight of sheep, as I have found to be the case with respect of beef to the live weight of cattle. In sheep, when newly clipped, I have found a very close uniformity in the proportion of mutton to live weight of different breeds in equal condition, so much so that I have reason to believe that the only difference from breed arises from the greater or less fleece of wool peculiar to any particular kind of sheep; at any rate, the difference from breed, independent of the difference of the weight of fleece, is too insignificant to require classification as in the case of oxen. The breeds of sheep on which I have had most opportunities of making observations are the Leicester, the Cheviot, the Black-faced mountain sheep, and crosses of the Leicester with both of the latter breeds. I have not made any experiments myself on the proportion of mutton to the live weight in South-Down sheep; but I do not apprehend that there will be any difference between them and Leicester sheep in equal condition, excepting so far as the proportion may be affected by the difference in the weight of fleece.

The subjoined Table shows the proportion of mutton to the live weight of Leicester sheep—namely, when in the wool after Christmas, and in summer when recently clipped:

Live weight of Sheep in stone, 14 lbs. avoird.	Per cent. of Mutton. In wool.	Newly shorn.
Above 20	71 to 72	75
19 to 20	69 to 70	73 to 74
17 to 19	67 to 68	71 to 72
16 to 17	66	69 to 70
14 to 16	64 to 65	67 to 68
12 to 14	62 to 63	
11 to 12	60 to 61	64 to 65
10 to 11	59	
9 to 10	57	62 to 63
8 to 9	55 to 56	60 to 61
7 to 8	53 to 54	59
6 to 7	51 to 52	57
5 to 6	50	

* I say "permitting," because I would desire only to see the majority of the people of the South granting to the minority *the right to do what they like with their own*, and emancipate them if so disposed. I have no desire to see any interference with the right of property.

EXAMPLES.—The following were five extraordinary fat two-year-old Leicester wether sheep, fed by the Duke of Northumberland, and slaughtered by Mr. March, of Greensic near Gateshead, in the county of Durham, January, 1846:

		st.	lbs.	st.		st.	lbs.			st.	lbs.
1.	Live weight,	24	3	or 24·2142 ·72							
				17·434224	or, by table,	17	6	Actual dead wt.		17	6
2.	.. ..	22	12	or 22·8751 ·72							
				16·470072	..	16	6½	..	..	16	10½
3.	.. ..	22	0	or 22 ·72							
				15·84	..	15	12	..	..	16	1
4.	.. ..	21	6	or 21·4285 ·71							
				15·214235	..	15	3	..	..	14	4
5.	.. ..	19	11	or 19·7857 ·70							
				13·849990	..	13	12	..	..	14	3
						78	11½			78	10½

The quantities of tallow severally yielded by these five sheep were as follows, viz.:—Nos. 1 and 2, 1 st. 4 lbs. each; No. 3, 1 st. 2½ lbs.; No. 4, 1 st. 8 lbs.; and No. 5, 10½ lbs.: showing 1, 2 and 3, very good provers; 4, an extraordinary prover; and 5, but an indifferent prover. The fleeces of all of them were quite ripe.

The following was a two-year-old Leicester wether sheep, in fair condition, killed by Mr. Robert Story, of Newcastle-upon-Tyne, May 21, 1846:

	st.	lbs.	st.		st.	lbs.			st.	lbs.
Live weight,	9	3	or 9·2142 ·57							
			5·252094	or, by table,	5	3½	Actual dead weight,		5	2

The following was a ewe, half-bred between Leicester and Cheviot, killed by Mr. William Hawksby, of Newcastle-upon-Tyne, in April, 1846:

	st.	lbs.	st.		st.	lbs.			st.	lbs.
Live weight,	6	9	or 6·6428 ·51							
			3·377828	or, by table,	3	5½	Actual dead weight,		3	6

The foregoing examples are not selected particularly as a test of the accuracy of the scale of proportions laid down, as many instances can be given for such a purpose quite as close to the actual dead weights as those above; but as the particulars of the live and dead weights of the first five are recorded in the public prints, probably furnished by Mr. Patten, the Duke of Northumberland's agent (vide *Newcastle Journal*, May 16, 1846), they may be referred to; and as both the live and dead weights of the last are registered in the book kept at the public weigh-house, in the butchers' market at Newcastle, it is also an instance on public record. The examples given above will serve to show the application of the scale of proportion to *sheep of extraordinary weight*, to *those of a general character*, and also to *sheep of a very shabby description*. [The (London) Plough.

"EXPERIMENTS IN THE FIELD."—In the published proceedings of an Agricultural Association in England, attention has been drawn to the refuse matters of bleach-works, as well as to other waste materials; and experiments have been suggested for testing their value to the practical farmer. A letter has been received from Mr. Pringle, at Ingram Farm, near Lisburn, in Ireland, describing some interesting and successful experiments of this kind, in which the waste leys of a bleach-work were found very advantageous, in conjunction with farm-yard manure, in promoting the growth of turnips. The subjoined results are deduced from the statement in the letter, as having been obtained from the experiments tried:

	Bulbs.	*Tops.*
Dung alone	17 tons 5¼ cwts.	8 tons 14 cwts. per acre.
Dung and guano	26 " 18½ "	8 " 1½ " "
Dung and waste leys	33 " 12¾ "	7 " 12½ " "

"The interesting difference in the weight of the tops, when the leys were used, appears to be connected with the large quantity of alkaline matter contained in the waste liquor; and, so far as the experiment goes, the liquid seems to influence the growth of the plant more in the bulb than in the leaf—a very important fact, if farther trials should confirm it."

IMPROVED REAPER.

McCORMICK'S PATENT VIRGINIA REAPER, IMPROVED.

"Whatever a man shall sow, that shall he reap."

THE vast disproportion between land and labor, and the dearness of the latter, lead to a constant stretch of ingenuity to contrive, in every department, labor-saving implements. Our limits, too, seem to be extending yet faster than the increase of laborers, great as that is, by immigration and natural increase.

While this state of things continues, as it must do yet for half a century at least, we shall go on skinning district after district, and State after State, of their virgin fertility, just as the dairy woman passes along, skimming off the cream from pan after pan. Of most crops it is easy to, and too many do make more than they can harvest and take care of. It was, we may suppose, in view of this greedy and improvident disposition, that it was ordained, "Whatever a man sow, that shall he reap."

Some labor-saving implement has long been a desideratum for harvesting *wheat and grass crops*, particularly on the western prairies, where land is at once so cheap and so fertile. To meet this demand, Mr. OBED HUSSEY, of Baltimore, and Mr. McCORMICK, of Virginia, have been, we believe, most successful. In what consists the difference between their Reapers we are not exactly advised, and therefore not prepared to pronounce upon their comparative merits. We happen to know on good authority that Mr. Hussey's is in high repute among the working, and what is better, if better need be, the *thinking* farmers of brave "Little Delaware," and we shall be ready to make known its particular excellence, in any authentic way that he or his friends may enable us to do.

In the mean time, we have had placed within our reach the illustrations which follow, in proof of the availability and efficiency of McCormick's machine, which appear to commend it very strongly to all—of whom there are not a few—who find it much easier to sow than to reap. What is here given is taken at random from a variety of testimonials, equally particular and conclusive, contained in Mr. McCormick's hand-bill; and to these, thus selected from many, we append the statement of Mr. BATEMAN, of the Ohio Cultivator:

FRANKFORT, Clinton Co., Ia.,

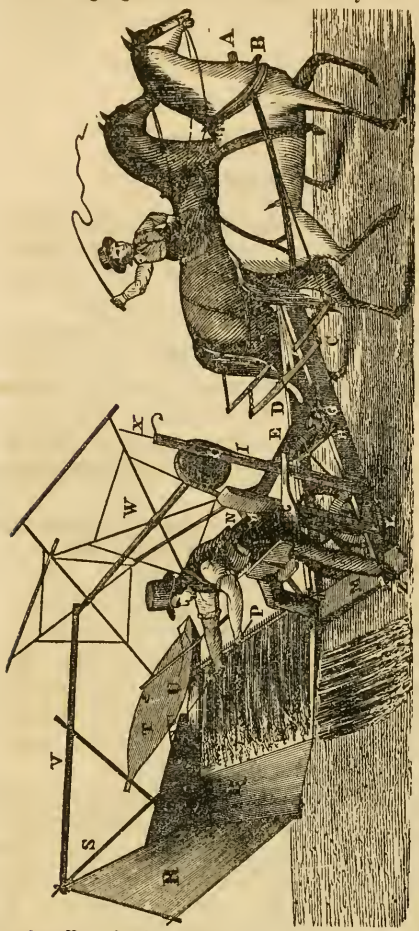
Dear Sir: I have used your Reaper about one-half the last harvest. I cut about 90 acres. The machine did not arrive until we were half done. My wheat was lodged, the ground rough and uneven. I have never before seen as much straw on the same quantity of ground. I can hardly conceive of more unfavorable circumstances than the "Reaper" was placed under, for a trial, yet the machine sustained its previous high reputation as a grain cutter. It performs well in standing grain, or in grain that is lodged. Two hands, one to drive and one to rake, will perform with the "Reaper" as much as eight hands could do with cradles, besides saving from a bushel to a bushel and a half per acre, that any cradler would leave on the ground. The machine is simple in its construction, and not liable, when properly made, to get out of order. If it should happen, any part except the sickle, to get out of order, there is no more difficulty in repairing it than a cradle or mowing-scythe. Yours, L. D. GRIGGS.

CYRUS H. McCORMICK, Esq.

DUPAGE, Will Co.,

Dear Sir: I take pleasure in communicating to you the result of my operations with your Reaper to the present time, which, I am proud to say, has been of the most satisfactory character. I cut, in nine days, with the Reaper, 150 acres of heavy wheat, since which I have cut 50 acres, and can say that the *work* was done *perfectly*, saving, I am satisfied, not less than a bushel

per acre; and this has been without any repairs or trouble with the machine. It would have required eight good cradlers to have cut my wheat in the time cut by the Reaper; and in addition to the cutting, the wheat was completely raked from the Reaper into gavels ready for binding.



In addition to the saving of grain and labor by your Reaper, it is worthy of remark that a very important consideration with the farmer is the cutting of his wheat rapidly and conveniently, when in a proper state for cutting, without being dependent upon hired labor, and thereby avoiding a very heavy loss from cutting either too early or too late. From these statements every farmer can make his own calculation as to the value of your Reaper. For my own part I consider it, to the Western country, the most important invention of the age, and that it will greatly increase the product of the country, not being able without it to reap so much as can be sowed.

Very respectfully, H. E. TOWNER.

P. S. The foregoing 200 acre completes my harvest of winter wheat, and I am now cutting my spring crop. H. E. T.

We take pleasure in announcing to our readers that Mr. McCormick has made such improvements in his Reaper as are found to greatly facilitate its operation, especially in the work of raking the cut grain from the platform, and that he is now engaged in manufacturing a large number of the machines at Cincinnati, for the supply of the South-western country. He assures us also that the utmost attention will be paid to the character of the workmanship in constructing the machines, so that no fault shall hereafter exist on that score.

From what we have seen of the operation of this machine, and the high testimonials from those who have used it extensively, we are confident that it will do first-rate work in good hands; and it will be seen from the advertisement in this paper that the terms of sale offer the fullest possible guaranty to purchasers. The need of machines for reaping grain was greatly felt by the farmers of Ohio last year, and we doubt not that a large number will be used at the coming harvest. Handbills giving fuller information, and testimonials of the character of the machine, can be obtained of Mr. McCormick, Cincinnati, or at the office of this paper. We will also, if desired, order the machine, for any of our readers who may wish to obtain them. [Ohio Cultivator.

AGRICULTURAL EXHIBITIONS—IN WHAT WAY ARE THEY USEFUL?

Their value is to be measured not by the number of people in attendance, nor yet by the number of things exhibited; but by the new facts and valuable addition they bring to the *stock of agricultural knowledge.*

If mere numbers, and admiration, and excitement, be the object, let a militia mustering be advertised at any old field × roads, take care to have a drum and fife with a sprinkling of red coats, and swords, and things that smell of violence and blood. Add to these a dozen prancing stallions, a live bear and a ring-tail tame monkey—not forgetting to have booths for sale of mead and gingerbread, with a barrel of still-burnt whisky in the crotch of a cart-tongue, and the purpose will be fully answered. The throng will be as large as any one can desire, but how many will go away either better or wiser? The whole aim of Agricultural Associations should be to increase and diffuse knowledge, and *spectacles* should be encouraged only as they contribute to that end.

305 B P72 v.3
Plough, loom and the anvil.
213

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v.3